Annual Review of Aircraft Accident Data

U.S. Air Carrier Operations Calendar Year 1998





20030917 078



National Transportation Safety Board Washington, D.C.

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PURPOSE OF THE ANNUAL REVIEW

The 1998 Annual Review of Aircraft Accident Data for U.S. Air Carrier Operations presents a statistical compilation and review of accidents that occurred in 1998 involving aircraft operated by U.S. air carriers. In addition to providing accident statistics for 1998, the review also includes general economic indicators that may influence aircraft activity for 1998 and contextual accident data from several years preceding the reporting period.

WHICH AIRCRAFT ARE INCLUDED IN THIS REVIEW?

This review covers accidents involving aircraft operated by U.S. air carriers under Title 14, Parts 121 and 135 of the Code of Federal Regulations (CFR). Air carriers are generally defined as operators that fly aircraft in revenue service. Title 14, also known as the Federal Aviation Regulations (FAR), describes operating requirements in Part 121 and Part 135. Briefly stated, Part 121 applies to major airlines and cargo carriers that fly large transport-category aircraft while part 135 applies to commercial air carriers commonly referred to as commuter airlines (i.e., scheduled Part 135) and air taxis (i.e., nonscheduled Part 135).

In March 1997, the definition of Part 121 operations changed. Prior to the change, scheduled aircraft with 30 or more seats were operated under Part 121 and those with less than 30 seats were operated under Part 135. After the change, scheduled aircraft with 10 or more seats were classified as Part 121 operations; therefore, since 1997, most carriers that once were popularly known as "commuters" now operate under Part 121.

In this review, the presentation of data for scheduled and nonscheduled Part 135 operations is separated due to the distinct operating characteristics of these groups. According to 14 CFR 119.3, a scheduled operation refers to, "any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the certificate holder or its representative offers in advance the departure location, departure time, and arrival location."

By contrast, a nonscheduled operation refers to, "any operation for compensation or hire that is one of the following:

- (1) Passenger-carrying operations conducted as a public charter under part 380 of this title or any operations in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative that are any of the following types of operations:
 - (i) Common carriage operations conducted with airplanes, including turboietpowered airplanes, having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, except that operations using a specific airplane that is also used in domestic or flag operations and that is so listed in the operations specifications as required by Sec. 119.49(a)(4) for those operations are considered supplemental operations;



- (ii) Noncommon or private carriage operations conducted with airplanes having a passenger-seat configuration of less than 20 seats, excluding each crewmember seat, and a payload capacity of less than 6,000 pounds; or
- (iii) Any rotorcraft operation.
- (2) Scheduled passenger-carrying operations conducted with one of the following types of aircraft with a frequency of operations of less than five round trips per week on at least one route between two or more points according to the published flight schedules:
 - (i) Airplanes, other than turbojet powered airplanes, having a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less; or
 - (ii) Rotorcraft.
- (3) All-cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less, or with rotorcraft."

In addition to the regulatory differences between scheduled and nonscheduled Part 135 operations, there are other general characteristics that distinguish these two groups. Carriers operating under scheduled Part 135 typically fly aircraft with single/twin turbine engines or single/twin reciprocating engines. They are more likely to fly short routes and a majority of operators are based in Alaska. By contrast, nonscheduled Part 135 operators are more evenly distributed throughout the United States and represent a diverse group ranging from operators with one small aircraft to those with multiple large corporate jets.

While there are many differences in the operating rules for scheduled and nonscheduled Part 135 operations, there are fewer factors that differentiate the operating rules for scheduled and nonscheduled Part 121 operations. In addition, while activity data for scheduled and nonscheduled Part 135 operators is collected using different methods, all Part 121 operators are required to report activity data on a regular basis. Therefore, data for scheduled and nonscheduled Part 121 operations have been combined for analysis.

WHICH AIRCRAFT ARE NOT INCLUDED IN THIS REVIEW?

- General aviation aircraft (A separate review, published annually by the NTSB, summarizes accident statistics for these aircraft);
- Military aircraft;
- Foreign-operated aircraft;
- Certain public use aircraft as defined in 49 CFR 830.5;
- Ultralights (e.g., powered aircraft weighing less than 254 lbs.);
- Experimental aircraft and;
- ♦ Commercial space launches.

CHANGES TO THE ANNUAL REVIEW

The 1998 Annual Review has been modified from past years and is now organized into three parts:

1. The first part presents an overview of the state of the economy and the aviation industry in 1998 as well as contextual statistics from previous years. It also includes a historical overview of both the number of accidents and accident rates between the years 1989 and 1998.





- 2. The second part investigates trends over the past 10 years in terms of various factors such as the types of flight, levels of aircraft damage, and level of human injury. This part is divided into three subsections for Part 121, scheduled Part 135, and nonscheduled Part 135 aircraft accidents.
- 3. The third part focuses on accidents that occurred during the 1998 calendar year and their circumstances. This part is similarly divided into three subsections for Part 121, scheduled Part 135, and nonscheduled Part 135.

In addition to changing the organization of the 1998 Annual Review, the format has also been changed from an unembellished tabular presentation to a more graphical presentation of statistical data with accompanying text. For readers who wish to view the data in a tabular form or to manipulate the data used in the report, the data set is available online at http://www.ntsb.gov/aviation/Stats.htm.

THE NTSB INVESTIGATIVE PROCESS

The NTSB investigates every civil aviation accident that occurs in the United States. It also provides investigators to serve as U.S. Accredited Representatives as specified in international treaties for aviation accidents overseas involving U.S.-registered aircraft, or involving aircraft or major components of U.S. manufacture. Investigations are conducted from NTSB Headquarters in Washington, D.C., or from one of the six regional or four field offices in the United States (see Appendix A).

Note that there is a distinction between the population of accidents investigated by the NTSB and those that are included in the Annual Review. While the NTSB investigates all civil aviation accidents that occur on U.S. soil (including domestic and foreign operators), the Annual Review describes accidents that occurred among U.S.-operated aircraft in all parts of the world.

THE NTSB AVIATION ACCIDENT/INCIDENT DATABASE

The NTSB is responsible for maintaining the government's database on civil aviation accidents. The NTSB Accident/Incident database is the official repository of aviation accident data and causal factors. The database was established in 1962 (by the NTSB's predecessor agency, the Civil Aeronautics Board) and approximately 2,000 new event records are added each year. For each record, there are over 650 fields of data concerning the aircraft, environment, engines, injuries, sequence of accident events and other topics. The NTSB Accident/Incident Database is available to the public at <ftp://www.ntsb.gov/avdata/>. Alternatively, there is a Database Query tool at <http://www.ntsb.gov/ntsb/query.asp#query_start> that allows users to search for sets of accidents using commonly known information such as date, location, and category of aircraft.



¹ For more detailed information about the criteria for NTSB investigation of an aviation accident or incident, see Title 49 Code of Federal Regulations 831.2.

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The NTSB database is primarily composed of aircraft accidents. An "accident" is defined in 49 CFR 830.2 as, "an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death² or serious injury,³ or in which the aircraft receives substantial damage.⁴" The database also contains several aviation "incidents," defined in 49 CFR 830.2 as, "occurrences other than accidents that are associated with the operation of an aircraft and that affect or could affect the safety of operations."

Accident investigators use the NTSB's Accident Data Management System (ADMS) software to enter data into the Accident/Incident Database. Within about a week of the event, a Preliminary Report, containing limited information such as date, location, aircraft operator, and type of aircraft becomes available. A Factual Report with additional information concerning the occurrence is available within a few months. See Appendix B for documents showing the information available in Preliminary and Factual Reports. A Final Report, which includes a statement of the probable cause and other contributing factors, is issued after the investigation has been completed. Five presidential appointees serving as Members of the Safety Board, or their delegates; must approve official statements dealing with the probable cause of an accident. Complete records are made available to the public only after this approval has been granted.

In determining the probable cause(s) of an accident, all facts, conditions, and circumstances are considered. This method enables the investigator to identify cause-and-effect relationships in the accident sequence about which something can be done to prevent similar accidents. Accordingly, for statistical purposes, where there are two or more causes of an accident, each is recorded and no attempt is made to establish a primary cause. The term "factor" is used, in general, to denote those elements of an accident that further explain or supplement the probable cause(s) and provides a means for collecting essential items of information that could not be readily categorized elsewhere in the system.

² "Fatal injury" means any injury that results in death within 30 days of the accident.

³ "Serious injury" means any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second; or third-degree burns, or any burns affecting more than 5 percent of the body surface.

⁴ "Substantial damage" means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.

AVIATION

OVERVIEW OF THE STATE OF THE COMMERCIAL MMENT IN 1998

GENERAL UNITED STATES SOCIAL, ECONOMIC, AND AVIATION INDICATORS

Since 1980, there have been increases in both general economic indicators as well as the number of air carriers, and person-miles traveled. Between 1990 and 1998, the U.S. resident population increased by 8.6% and the gross domestic product rose by 26.7%. While the number of major air carriers decreased slightly (down 7.1%) during this time, the number of other carriers (including national, large regional, and medium regional) increased by 48.2%. The number of aircraft and the number of air carrier passenger miles traveled grew at a similar pace with increases of 33.3% and 33.9%, respectively. In 1998, the median household income was \$41,032 with an average transportation expenditure of \$6,616 and an average of \$271 spent on airline tickets.6

	1980	1990	1993
Resident population (millions) ⁷	227.3	248.8	270.2
Civilian labor force participation (percent) ⁸	63.8	66.4	67.1
Gross domestic product (billions) ⁹	\$4,900.9	\$6,707.9	\$8,508.9
Median household income 10	\$35,238	\$38,446	\$41,032
Number of households (millions) 11	80.8	93.3	102.5
Number of aircraft ¹²	3,808	6,083	8,111
Number of major air carriers 13	n/a	14	13
Number of other air carriers ¹⁴	n/a	56	83
Air carrier passenger miles (millions) ¹⁴	204,368	345,873	463,262

⁶ U.S. Department of Labor, Bureau of Labor Statistics, Consumer Expenditure Survey, 1998, unpublished detailed table 1100, August 2000.



⁷ From Bureau of Transportation Statistics (BTS), 2000 National Transportation Statistics (BTS 01-01), Table A. http://www.bts.gov/btsprod/nts/table a.pdf>.

⁸ Participation rates, for ages 16 and older. From Fullerton, H. N. Jr. (December, 1999). Labor force participation: 75 years of change, 1950-98 and 1998-2025. Monthly Labor Review.

⁹ In year 1996 dollars. From the Bureau of Economic Analysis http://www.bea.gov/bea/dn/gdplev.xls.

¹⁰ From US Census Bureau http://www.census.gov/hhes/income/histinc/h07.html, in year 2000 dollars, using the CPI-U-RS (Consumer Price Index Research Series Using Current Methods).

¹¹ BTS, 2000 National Transportation Statistics (BTS 01-01), Table A. http://www.bts.gov/btsprod/nts/ table_a.pdf>.

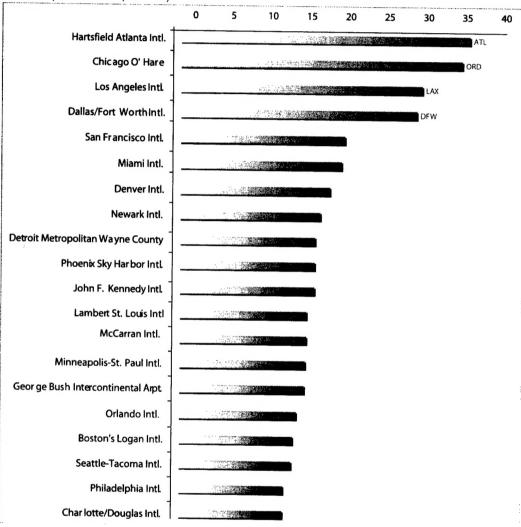
¹² BTS, 2000 National Transportation Statistics (BTS 01-01), Table 4.8 http://199.79.179.77/btsprod/ nts/Ch4 web/W4-8.XLS>.

¹³ Carrier groups are categorized based on their annual operating revenues as major, national, large regional, and medium regional. The thresholds were last adjusted July 1, 1999, and the threshold for major air carriers is currently \$1 billion. The other air carrier category contains all national, large regional, and medium regional air carriers. Source: BTS, 2000 National Transportation Statistics (BTS 01-01), Table 2 < http://199.79.179.77/btsprod/nts/Ch1_web/W1-2NEW.XLS>.

¹⁴ Certificated, domestic, all services. Source: BTS, 2000 National Transportation Statistics (BTS 01-01), Table 1-31 http://199.79.179.77/btsprod/nts/Ch1 web/W1-31NEW.XLS>

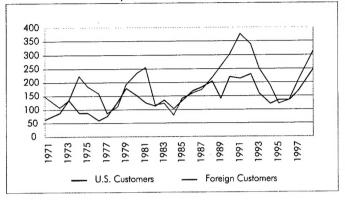
In 1998, there were 652.3 million passenger enplanements at U.S. airports. The following graph depicts the number of enplanements at the top 20 airports in the United States in 1998. With 35.3 million, Hartsfield Atlanta International Airport surpassed Chicago's O'Hare airport, the leader in 1997, as the airport with the largest number of enplanements.











Total Aircraft Reported in Operation by Air Carriers by Type of Aircraft for 1987-1998

1987	5,250	3,575	1,241	421	13
1988	5,660	3,915	1,375	362	8
1989	5,778	3,942	1,476	353	7
1990	6,083	4,148	1,595	329	11
1991	6,054	4,167	1,598	283	6
1992	7,320	4,446	1,894	847	133
1993	7,297	4,584	1,868	721	124
1994	7,370	4,636	1,782	824	128
1995	7,411	4,832	1,713	748	118
1996	7,478	4,922	1,696	739	121
1997	7,616	5,108	1,646	728	134
1998	8,111	5,411	1,832	751	117

Since 1971, the annual number of new U.S. jet transport aircraft deliveries has more than doubled for both U.S. and foreign customers. Shipments showed peaks in the mid 1970s, early 1980s, and early 1990s with more dramatic increases for foreign customers.16 The total number of U.S. air carrier aircraft in operation between 1987-1998 shows a similar trend with a steady increase punctuated by a sharper increase in the early 1990s.17

AIRCRAFT ACTIVITY

The following charts depict aircraft activity for Part 121, scheduled Part 135, and nonscheduled Part 135 aircraft between 1989 and 1998. Aircraft activity can be measured in several ways: Flight hours, departures, and

miles flown are often used for commercial operations. All Part 121 air carriers and scheduled Part 135 carriers are required to report revenue flight activity¹⁸ to the Department of Transportation's (DOT) Research and Special Programs Administration (RSPA).¹⁹ This information is maintained by the Bureau of Transportation Statistics (BTS) and is aggregated by the Federal Aviation Administration Systems Process Audit staff (AFS-40) to produce annual reports of flight activity.

By contrast, nonscheduled Part 135 operators are not required to report activity data for their revenue flights. Instead, activity for this group of aircraft is estimated using the annual General Aviation and Air Taxi Activity (GAATA) Survey. The GAATA Survey was established in 1978 to gather information such as flight hours, avonics, base location, and use from owners of general aviation and nonscheduled Part 135 aircraft. However, since reporting is not required for nonscheduled Part 135 revenue flights, the activity data for this segment may not be as reliable as those from other segments of commercial aviation.



¹⁶ Includes 707, 737, 747, 757, 767, 777, MD-11, MD-80, MD-90, MD-95, DC-8, DC-9, DC-10, and L-1011. From Aerospace Industries Association http://www.aia-aerospace.org/stats/aero_stats/stat21.pdf.

¹⁷ The number of aircraft is the monthly average of the number of aircraft reported in use for the last three months of the year and does not include on-demand air taxis. Source: 1983 - 1991 Air Carrier Aircraft Utilization and Propulsion Reliability Report; Aviation Standards National Field Office, Federal Aviation Administration. Beginning in 1992 the source is the Vital Information System.

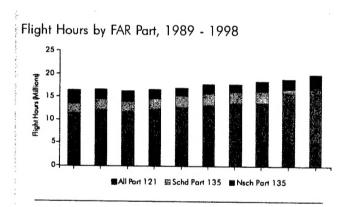
¹⁸ Activity data includes revenue aircraft hours, revenue aircraft departures, revenue aircraft miles flown, and several others.

¹⁹ Part 121 operators report activity on a monthly basis, and scheduled Part 135 operators report quarterly.

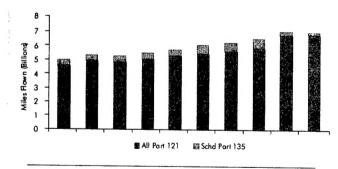
In previous Annual Reviews, activity rates were presented using metrics of 100,000 flight hours, 100,000 departures, and 1,000,000 miles flown. However, due to an increase in activity and a decrease in accident numbers, the use of these metrics to calculate accident rates in recent years has produced fractional numbers. For that reason, this report presents activity in 1,000,000 flight hours, 1,000,000 departures, and 1,000,000,000 miles flown. In addition, while aircraft activity is presented using all three metrics, accident rates in this report are calculated using flight hours and departures only.

For all of the Part 121 aviation activity indicators, there is an increase over the 10-year period. The notable increases observed beginning in 1997 are most likely attributable to the 1997 change in the FARs that reclassified many Part 135 operations into Part 121 operations. In 1998, flight hours and departures increased by 6.2% and 6.5%, respectively; however, total miles flown increased by only 0.7%. It is possible that this is due to the fact that many of the former Part 135 aircraft that were added to this sample fly slower and make shorter trips than larger Part 121 aircraft.

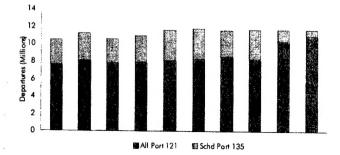
For scheduled Part 135 aircraft, there was a substantial decrease in all activity indicators beginning in 1997 and continuing through 1998. Between 1997 and 1998, total flight



Miles Flown by FAR Part, 1989 - 1998



Departures by FAR Part, 1989 - 1998



hours decreased by 64.0%, total miles flown decreased by 79.8%, and total departures decreased by 49.3%. While one would typically expect a high degree of correlation among these aircraft activity indicators, it is likely that this variation is due to the fact that many of the aircraft reclassified from Part 135 to Part 121 in 1997 were larger aircraft that traveled further, traveled faster, and had fewer departures than those that maintained their Part 135 status.

No similar decrease is observed in nonscheduled Part In fact, between 1997 and 1998, there was a 22.3% increase in the total flight hours flown. Nonscheduled Part 135 aircraft are largely represented by air taxis and small cargo planes: therefore, few of them were reclassified to Part 121 in 1997. It is possible that the observed increase in flight hours flown represents a natural increase in activity for these aircraft.

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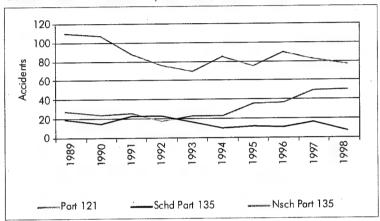
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HISTORICAL AND CURRENT ACCIDENT DATA

UNITED STATES COMMERCIAL AIRCRAFT ACCIDENTS

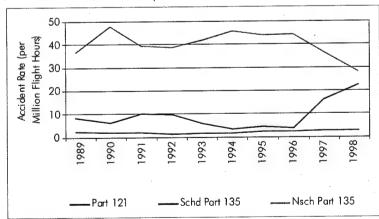
There are consistently more Part 135 accidents per year compared to Part 121, as shown in the following graph. In 1998, there were 50 Part 121 accidents, 8 scheduled Part 135 accidents, and 77 nonscheduled Part 135 accidents.

US Air Carrier Accidents by FAR Part, 1989-1998



Accident rates are also higher for Part 135 aircraft operations compared to Part 121 operations. As shown in the following graph, Part 121 rates have stayed fairly stable while rates for scheduled Part 135 increased between 1996 and 1998 and those for nonscheduled Part 135 decreased during this same time period. In 1998, the accident rate for Part 121 was 2.97 accidents per million flight hours. For scheduled Part 135, it was 22.62 accidents per million flight hours, and for nonscheduled Part 135, it was 27.99 per million flight hours.

Air Carrier Accident Rates by FAR Part, 1989 - 1998

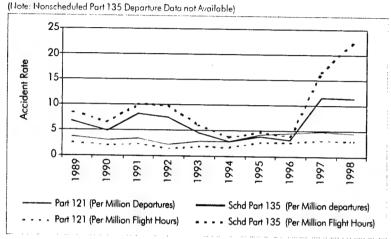


The following graph demonstrates the effects of using different activity measures on the presentation of accident rates. Regardless of whether flight hours or departures are used to calculate accident rates, the same general pattern emerges. Scheduled Part 135 accident rates are higher than Part 121 rates until 1994 when rates for the two groups converge. After 1996, and the reclassification of many scheduled Part 135 operations to Part 121, there is a notable divergence with increases in scheduled Part 135 rates attributable to the

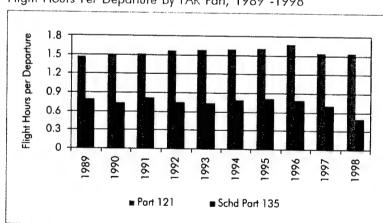


reduction in activity for this group. However, the divergence is more dramatic when using flight hours to calculate the rate. One explanation is that aircraft remaining in Part 135 after the reclassification fly shorter duration trips than those that were reclassified to Part 121.

Comparison of Part 121 and Scheduled Part 135 Accident Rates Using Flight Hours and Departures to Calculate Rates.



The next graph further clarifies the difference between Part 121 and scheduled Part 135 aircraft in terms of the average number of flight hours per departure.



Flight Hours Per Departure by FAR Part, 1989 -1998

Throughout the Annual Review, rates will be calculated using both flight hours and departures as exposure measures. The benefit of using flight hours as an exposure measure is that it is the only exposure measure available for nonscheduled Part 135 as well as Part 121 and scheduled Part 135 aircraft. However, because Part 121 and Part 135 do not have similar flight hours-per-departure rates, departures are also used to calculate accident rates. Again, the 1998 Annual Review has changed from using a base rate of 100,000 flight hours/departures to using 1,000,000 (one million). Any comparisons with reports from previous years should take this into account.



PART

OPERATIONS: 10-YEAR SUMMARY

NTSB SEVERAL CLASSIFICATION

Historically, the \$138 has defined a "Fatal Accident" as one in which there was at least one fatality. However, some accidents involving ground crew fatalities pose no threat to the aircraft or its occupants. While the Safety Board has found no single index that perfectly indicates the state of airline safety, it developed a new classification system for Part 121 accidents in response to a congressional mandate issued October 9, 1996.²⁰ The following definitions were developed to gauge accident severity for Part 121 accidents. Part 135 classifications continue to use the traditional definitions.

DEFINITIONS OF NTSB SEVERITY CLASSIFICATIONS

Major-an accident in which any of three conditions is met:

- ♦ A Part 121 aircraft was destroyed,
- ◆There were multiple fatalities, or
- ◆There was one fatality and a Part 121 aircraft was substantially damaged.

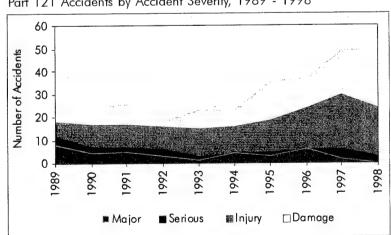
Serious-an accident in which at least one of two conditions is met:

- ♦There was one fatality without substantial damage to a Part 121 aircraft, or
- ◆There was at least one serious injury and a Part 121 aircraft was substantially damaged.

Injury-a nonfatal accident with at least one serious injury and without substantial damage to a Part 121 aircraft.

Damage-an accident in which no person was killed or seriously injured, but in which any aircraft was substantially damaged.

The following graphs depict both the number and rate of Part 121 accidents and the severity of the accidents. In 1998 there were 50 Part 121 accidents and, as in preceding years, major and serious accidents made up the smallest proportion of these accidents.

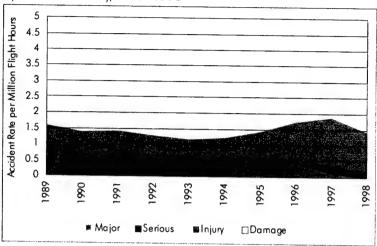


Part 121 Accidents by Accident Severity, 1989 - 1998

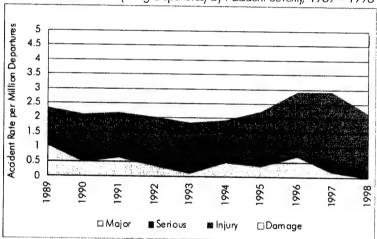
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Part 121 Accidents Rate (Using Flight Hours) by Accident Severity, 1989 - 1998

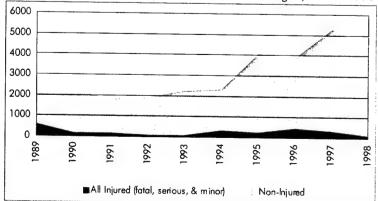


Part 121 Acadents Rate (Using Departures) by Acadent Severity, 1989 - 1998



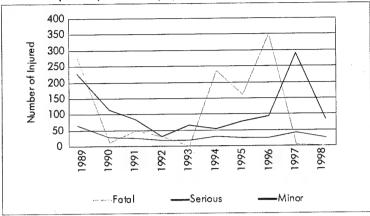
There is a consistent trend over time showing that a very small proportion of people aboard Part 121 flights involved in accidents sustain injuries. In 1998, there were over 652 million passengers enplaned on aircraft flying under Part 121. Of these, 4,552 people boarded Part 121 flights that were involved in accidents and 110 people sustained injuries.

Injured Compared to Non-injured Aboard Part 121 Flights, 1989 - 1998

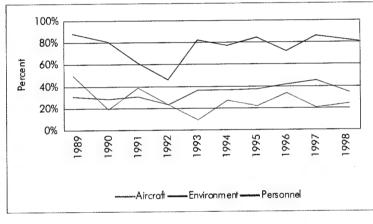








Broad Causes/Factors for Part 121 Accidents, 1989 - 1998



In 1998, there were no fatalities, 25 serious injuries, and 85 minor injuries among those aboard Part 121 flights involved in accidents. These numbers are relatively low compared to preceding years; however, it is difficult to define a trend in the number of people injured since one or two major accidents can lead to a dramatic increase in the number of injuries in a given vear.

PROBABLE CAUSES, FACTORS, AND THE BROAD CAUSE/FACTOR CLASSIFICATION

In determining the probable cause(s) of an accident, all facts, conditions, and circumstances are considered. This method

enables the investigator to identify cause-and-effect relationships in the accident sequence about which something can be done to prevent similar accidents. The term "factor" is used to denote elements of an accident that further explain or supplement the probable causes(s). This provides a means for documenting essential items of information that could not be readily categorized elsewhere in the system.

The broad cause/factor classification divides all accident causes and factors into three groups — aircraft, environment, and personnel — to provide an overview of fundamental accident origins. When there are two or more causes/factors for an accident, each is recorded and no attempt is made to identify one as the primary cause. Therefore, as depicted in the following figure, percentages of causes/factors in a given set of accidents will generally sum to more than 100%.

For 1998 Part 121 accidents, cause/factor information was available in 41 of 50 cases. Within this set, aircraft were cited as causes/factors in 24.4% of accidents, environmental causes/factors were present in 34.2% of accidents, and personnel-related causes/factors were present 80.5% of accidents. This distribution is fairly consistent with the preceding 9-year period with the exception of aircraft-related causes/factors, which have shown a moderate decline.



SCHEDU 10-YEA

35 OPERATIONS

Part 135 regular commercial air carriers that fly small commuter aircraft, cargo planes, and air taxis. Scheduled Part 135 operations refer to revenue-earning, passenger-carrying operations for which the certificate holder or its representative offers departure/arrival locations and departure times in advance of the flights.

Unlike Part 121, all Part 135 accidents are classified by traditional definitions including highest level of injury (fatal, serious, minor, or none), and level of aircraft damage (destroyed, substantial, minor, or none).

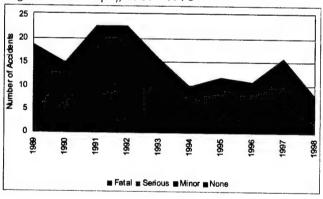
DEFINITIONS FOR HIGHEST LEVEL OF INJURY

Fatal-Any injury that results in death within 30 days of the accident.

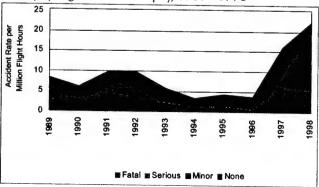
Serious-Any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second-or third-degree burns, or any burns affecting more than 5 percent of the body surface

Minor-Any injury that is neither fatal nor serious. **None-**No injury.

Scheduled Part 135 Accidents by Highest Level of Injury, 1989 - 1998



Scheduled Part 135 Accidents Rates (per million Flight Hours) by Highest Level of Injury, 1989 - 1998



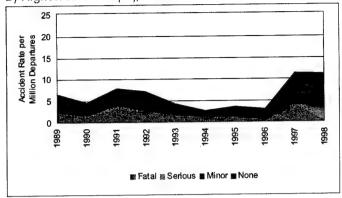
In 1998, there were eight scheduled Part 135 accidents. This is a relatively small number compared to other years; however, this reduction is likely associated with the reclassification of aircraft from Part 135 to Part 121 in 1997.

While the number of scheduled Part 135 accidents declined following the 1997 aircraft reclassification, the accident rate showed a marked increase. This is likely attributable to the sharp decrease in activity among scheduled Part 135 operators as a result of the reclassification. There was an 87.2% decrease in flight hours and a 79.9 % decrease in departures for scheduled Part 135 operations between 1996 and 1998. It also suggest that those aircraft that were reclassified to Part 121 in 1997 comprised a relatively safe segment of the former Part 135 group.

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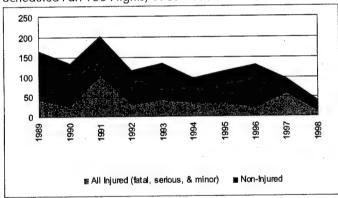
98

Scheduled Part 135 Accidents Rates (per Departures) by Highest Level of Injury, 1989 - 1998



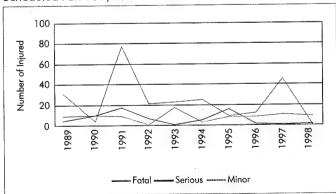
In 1998, 42 people boarded scheduled Part 135 flights that were involved in accidents and from this group, 11 people received injuries. The relative proportion of people who were injured in scheduled Part 135 accidents is notably higher than in Part 121 accidents.

Injured Compared to Non-injured Aboard Scheduled Part 135 Flights, 1989 - 1998



In 1998, there were no fatal injuries that resulted from scheduled Part 135 accidents. However, there were two serious injuries and nine minor injuries.

Number of Injured by Level of Injury Scheduled Part 135, 1989 - 1998



As noted earlier, Part 135 accidents are also classified by the level of damage (destroyed, substantial, minor, or none) sustained by the aircraft.

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DEFINITIONS FOR LEVEL OF AIRCRAFT DAMAGE

Destroyed-Damage due to impact, fire, or in-flight failures to the extent to not be economically repairable.

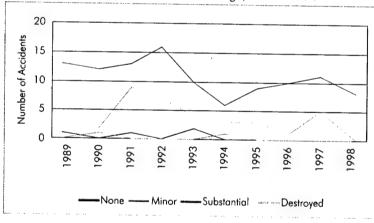
Substantial Damage-Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.²¹

Minor Damage-Any damage that neither destroys the aircraft nor causes substantial damage.

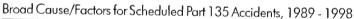
None-No damage.

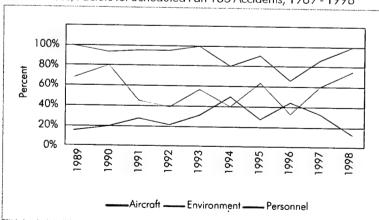
All eight of the aircraft involved in scheduled Part 135 accidents in 1998 were classified as having substantial damage. The following graph also shows that, over the past 10-year period, most scheduled Part 135 aircraft that were involved in accidents received either substantial damage or were destroyed.

Scheduled Part 135 Level of Aircraft Damage, 1989 - 1998



In 1998, 12.5% of all scheduled Part 135 accidents listed aircraft as a cause or factor in the accident. Environmental causes/factors were pre-sent in 75.0% of accidents and personnel-related causes/factors were present in 100% of accidents.



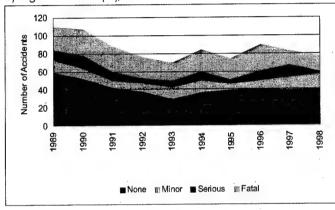




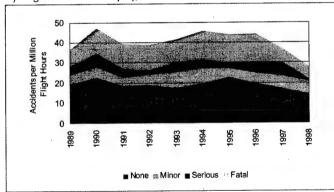
Nonscherung Part 135 Operations 10-Year Summary

Nonscheduled of the consider to revenue-earning flights in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative. They include all cargo flights and some passenger flights. The definitions for highest level of injury and level of aircraft damage for nonscheduled Part 135 operations are identical to those for scheduled Part 135 operations.

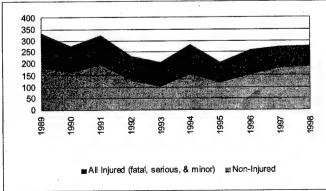
Nonscheduled Part 135 Accidents by Highest Level of Injury, 1989 - 1998



Nonscheduled Part 135 Accident Rates by Highest Level of Injury, 1989 - 1998



Injured Compared to Non-injured Aboard Nonscheduled Part 135 Flights, 1989-1998

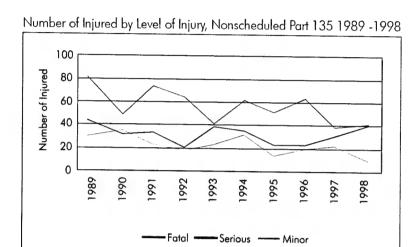


There were 77 nonscheduled Part 135 accidents in 1998. Over the past 10 years, both the number of accidents and the accident rates for nonscheduled Part 135 accidents have declined. Like scheduled Part 135 activity levels, nonscheduled Part 135 activity levels decreased, with a 26.2% reduction in flight hours between 1996 and 1998. However, because nonscheduled Part 135 operators are not required to report revenue activity to the FAA like other commercial operations, the activity data and rates presented for this segment of aviation are not as reliable (for a more detailed discussion of this issue, see Aircraft Activity on page 7).

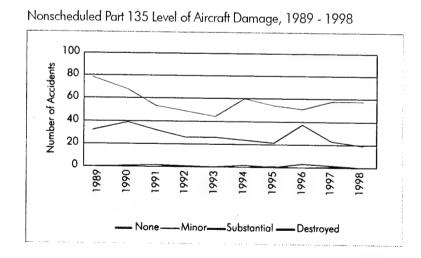
In 1998, 278 people who boarded nonscheduled Part 135 flights were involved in accidents and, of these, 90 sustained injuries. As with scheduled Part 135 accidents, the relative proportion of people who are injured in nonscheduled Part 135 accidents is higher than in Part 121 accidents.



In 1998, 41 people were fatally injured as the result of nonscheduled Part 135 aircraft accidents. In addition, 9 people sustained serious injuries and 40 people received minor injuries. With the exception of minor injuries, these numbers are lower than preceding years.

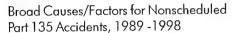


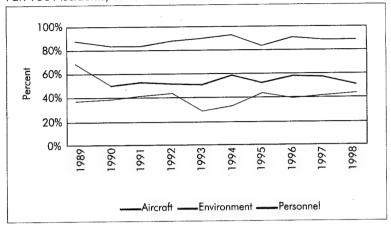
Of the 77 aircraft involved in nonscheduled Part 135 accidents in 1998, 19 were destroyed and 58 were classified as having substantial damage. Similar to scheduled Part 135 aircraft, the following graph shows that, over the past 10-year period, most nonscheduled Part 135 aircraft that were involved in accidents received either substantial damage or were destroyed.



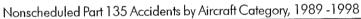
In 1998, cause/factor information was available for 71 of 77 accidents. In 43.7% of these cases, aircraft were listed as causes/factors in the accident. Environmental causes/factors were present in 50.7% of accidents and personnel-related causes/factors were present in 88.7% of accidents.

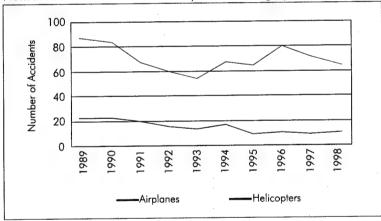






Of the 77 nonscheduled Part 135 accidents that occurred in 1998, 66 involved airplanes and 11 involved helicopters. This ratio of helicopter to airplane accidents has been fairly stable over the past several years.

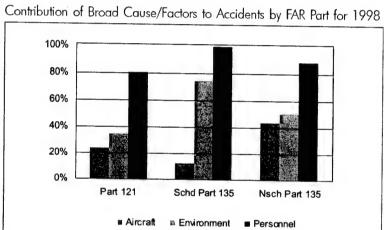






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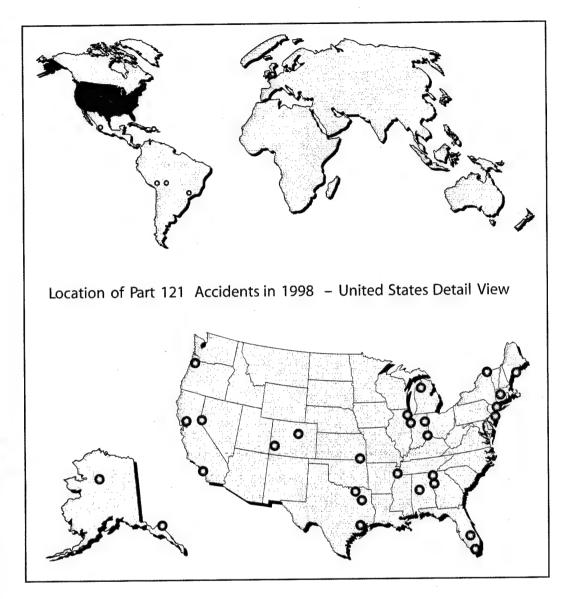
described trends in accidents among U.S. air carriers While the pre over a 10-year focuses on events specific to 1998. As an overview, comparison of the role that personnel, environment, the following gra and aircraft played in all air carrier accidents that occurred in 1998. Most notable is the fact that personnel were cited as a cause or factor in the largest percent of accidents for all categories of commercial operations described in this report. Environment accounted for the second largest contribution, and aircraft-related problems contributed the least. While the graph suggests that aircraft-related problems were especially low among scheduled Part 135 accidents, it is important to note that this group comprises only eight accidents, which limits the representativeness of the sample.



1998 PART 121 ACCIDENTS

As discussed in the Introduction, Part 121 applies to major airlines and cargo carriers that fly large transport-category aircraft. Of the 50 Part 121 accidents in 1998, 43 occurred in the United States, 6 in foreign countries, and 1 over the Atlantic Ocean.





Within the group of 50 Part 121 accidents in 1998, 64.0% were passenger flights, 20.0% carried both passengers and cargo, and 16.0% were cargo-only. In addition, 14.0% of Part 121 accidents occurred during nonscheduled flights while 86.0% occurred during scheduled operations. This is particularly notable since nonscheduled flights accounted for only 5.3% of total Part 121 flight hours and just 4.0% of Part 121 departures. However, with such a small sample size, it is difficult to make inferences based on these data.



The majority of 1998 Part 121 accident aircraft had turbofan engines (58.0%). Turboprop engines were used in 24.0% of accident aircraft, turbojet in 16.0%, and reciprocating in 2.0%.

Part 121 Accident Severity Classifications by Type of Operation for 1998

	Non	scriedujer.		Sheline		
	Cango	Passenger	Cargo	Passanger	Pasaeriger and Cargo	T dal
Major	0	0	0	0	0	0
Serious	0	0	0	3	0	3
Injury	1	1	0	15	4	21
Damage	5	0	2	13	6	26
Total	6	1	2	31	10	50

Part 121 Accidents, Engine Type by Highest Injury for 1998

Sale of V	Tik at	Furnier	Terror (s)	la a trible of line.	
Major	0	0	0	0	0
Serious	2	0	1	0	3
Injury	15	3	3	0	21
Damage	12	5	8	1	26
Total	29	8	12	1	50

Occurrences are documented within an accident's "sequence of events." The concept of sequence of events as a method to classify accidents was introduced in 1982 to describe the circumstances of an accident. There are a total of 52 occurrence codes that may be used to outline the events in any given accident. The following table displays the first occurrences for all of the 1998 Part 121 accidents for which sequence of events data were available. The most frequently cited first occurrences for Part 121 accidents in 1998 were on ground/water collisions with object (31.7%), in-flight encounter with weather (19.5%), and uncontrolled altitude deviations (9.8%).

Part 121 Accident First Occurrences for 1998

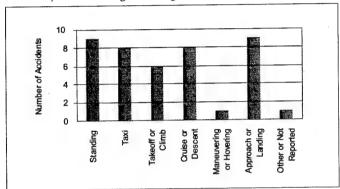
FIST OPENTAGES		7.44
On Ground/Water Collision With Object	13	31.7%
In Flight Encounter With Weather	8	19.5%
Altitude Deviation, Uncontrolled	4	9.8%
Airframe/Component/System Failure/Malfunction	3	7.3%
Fire	3	7.3%
Dragged Wing, Rotor, Pod, Float Or Tail/Skid	2	4.9%
Miscellaneous/Other	2	4.9%
Abrupt Maneuver	1	2.4%
Loss Of Control - On Ground/Water	1	2.4%
Loss Of Engine Power	1	2.4%
Loss Of Engine Power (Partial) - Mech Failure/Malf	1	2.4%
On Ground/Water Encounter With Terrain/Water	1	2.4%
Vortex Turbulence Encountered	1	2.4%
Total	41*	100.0%

^{* 41} of 50 of Part 121 Accidents included Sequence of Events Data



The following graph displays the aircraft's phase of flight during the first occurrence. There are 50 distinct phase-of-flight codes that investigators may use to describe the chronology of occurrences. However, these detailed phases have been condensed for this graph. For example, the category "Standing" includes standing with engines operating, standing with engines not operating, and standing while starting engines. For the 41 of 50 Part 121 accidents with sequence of events information, the phase of flight during first occurrence was fairly evenly distributed with the exception of Maneuvering or Hovering, which is not a typical activity for aircraft that operate under Part 121.

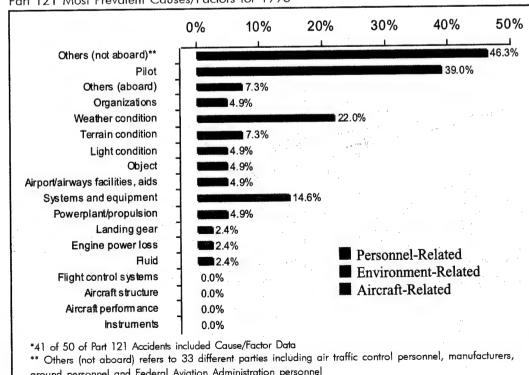
Part 121, Phase of Flight During First Occurrences for 1998



The following graph displays the causes and factors of 1998 Part 121 accidents with sequence of events information available. While there are about 2,000 unique codes that investigators may use to document causes/factors, this graph summarizes them using both the Broad Causes/Factors (Personnel, Environment, and Aircraft) as well as the next level of subcategory.

This graph shows that many accidents are attributed to personnel-related causes and factors. With 39.0%, the pilot is the most frequently cited individual in the personnel category; however, 43.3% of accidents were attributed to other people not aboard the aircraft, such as ground personnel, manufacturer personnel, and

Part 121 Most Prevalent Causes/Factors for 1998*



ground personnel and Federal Aviation Administration personnel



several others. In the broad category of environmental factors, weather conditions were cited most (22.0%) with no other category exceeding 10%. Similarly, in the broad category of aircraft, systems and equipment causes/factors were present in 14.0% of Part 121 accidents in 1998 with no other category accounting for more than 5% of accidents.

Among the 50 Part 121 accidents that occurred in 1998, only 1 accident resulted in a fatality: A ground crewmember inadvertently walked into a rotating propeller. In addition to this fatality, there were 30 serious injuries and 90 minor injuries that resulted from Part 121 accidents in 1998. Cabin crewmembers suffered the highest percentage of injury with 14.7% of all cabin crewmembers involved in accidents sustaining some level of injury. Of the 4,258 passengers involved in accidents, only 2.0% received injuries. The Safety Board does not document people on the ground who were at the accident site but received no injuries.

Part 121 Accident Injuries by Role for 1998

加州 亚亚	Fatal	Spirients	Minor	None	Tolor
Flight Crew	0	0	0	113	113
Cabin Crew	0	13	12	145	170
Other Crew	0	0	0	11	11
Passengers	0	12	73	4173	4258
Total Aboard	0	25	85	4442	4552
On Ground	1	5	5	-	11
Total	1	30	90	4442	4563
Accidents	1	23	7	19	50

1998 PART 135 ACCIDENTS

As noted in the Introduction, Part 135 applies to small commercial air carriers (i.e., scheduled Part 135) and air taxis (i.e., nonscheduled Part 135). The presentation of data for scheduled and non-scheduled Part 135 operations is separated due to the distinct operating characteristics of these groups.

Scheduled Part 135 operations consist of common carriage passenger-revenue flights using aircraft with fewer than 10 seats. In addition, to be considered a scheduled operation, the departure location, departure time, and arrival location must be offered in advance by the operator, and the operator must include five or more round trips per week between two or more points.

Nonscheduled operations are passenger-carrying operations in which the departure time, departure location, and arrival location are specifically negotiated with the customer. These include common carriage operations conducted with airplanes having a passenger-seat configuration of 30 seats or fewer and a payload capacity of 7,500 pounds or less; private carriage operations conducted with airplanes having a passenger-seat configuration of less than 20 seats and a payload capacity of less than 6,000 pounds; and cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less.

Of the 85 Part 135 accidents in 1998, 77 were flying nonscheduled operations and 8 were flying scheduled operations. Among the accidents that occurred flying under



nonscheduled operations, 61.0% were passenger flights, 2.6% carried both passengers and cargo, and 36.4% carried either cargo or mail. Among the scheduled Part 135 accidents, seven out of eight (87.5%) were passenger flights, and one(12.5%) carried passengers and cargo. In both nonscheduled and scheduled Part 135 accidents, few accidents were fatal or serious with 11.6% of nonscheduled accidents and 12.5% of scheduled accidents falling into one of these two categories.

Part 135 Accident Classifications by Type of Operation for 1998

		No	nscheduled	Sche	and the second second		
	Cargo	Mail	Passenger and Cargo	Passenger	Passenger and Cargo	Passengere	Total
Fatal	9	1	0	7	0	0	17
Serious	1	0	0	2	1	1	5
Minor	4	1	1	10	0	1	17
None	11	1	1	28	0	5	46
Total	25	3	2	47	1	. 7	85

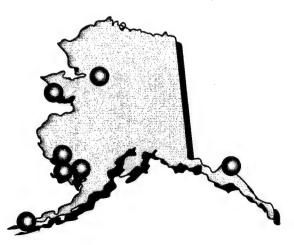
There are two main types of flight plans that are filed: visual flight rules (VFR) and instrument flight rules (IFR). VFR govern the conduct of flight under visual meteorological conditions (VMC), and IFR govern the conduct of flight under instrument meteorological conditions (IMC). In 1998, the flight plans of 59.7% of non-scheduled Part 135 accidents were under VFR and 32.5% were under IFR. In 7.8% of cases, the flight plan was unknown or there was no flight plan. For scheduled Part 135, all accidents that occurred in 1998 happened under VFR.

Part 135-Accidents by Scheduled Type and Flight Plan for 1998

Contract Con	Nonscheduled	Scheduled	Total
Visual Flight Rules (VFR)	46	8	14
Instrument Flight Rules (IFR)	25	0	25
None	4	0	4
Unknown	2	0	2
Total	77	8	85

1998 SCHEDULED PART 135 ACCIDENTS

There were eight scheduled Part 135 accidents in 1998. All of these accidents occured in Alaska where more than half of all scheduled Part 135 operators are certified.





Seven of eight scheduled Part 135 accidents involved airplanes with reciprocating engines, and one accident involved an airplane with a turboprop engine.

Scheduled Part 135 Accidents – Engine Type by Highest Injury for 1998

	i. Resiprocoting	Turbo Proje	lotal
Fatal	0	0	0
Serious	1	1	2
Minor	1	0	1
None	5	0	5
Total	7	1	8

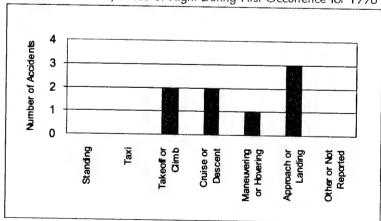
Although there were only eight scheduled Part 135 accidents in 1998, the first occurrence for three of these accidents was an in-flight collision with terrain or water.

First Occurrences for Scheduled Part 135 Accidents in 1998

1	12.5%
1	12.5%
Ħ	12.5%
1	12.5%
1	12.5%
3	37.5%
	3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

Of the eight scheduled Part 135 accidents that occurred in 1998, the phase of flight during the first accident occurrence was takeoff or climb in two cases, cruise or descent in two cases, maneuvering or hovering in one case, and approach or landing in three cases.

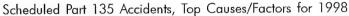
Scheduled Part 135, Phase of Flight During First Occurrence for 1998

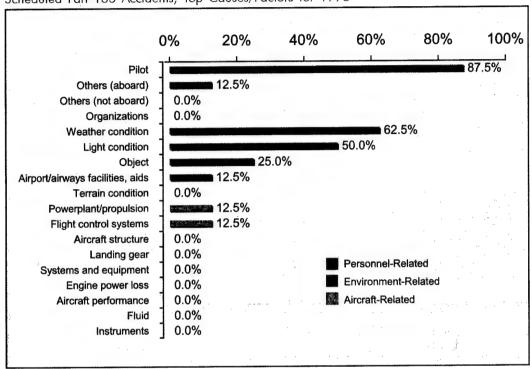






As with Part 121, the pilot was identified as a cause/factor in a majority of scheduled Part 135 accidents (87.5%). In the broad category of environmental factors, weather conditions were cited in five of eight accidents (62.5%) and light conditions were cited in four of eight accidents (50.0%). Aircraft-related factors were cited in two accidents.





There were no fatalities that resulted from scheduled Part 135 accidents in 1998. However, there were 2 serious injuries and 9 minor injuries. The proportion of people injured in flights was approximately equal for crewmembers and passengers with 25.0% and 26.5%, respectively.

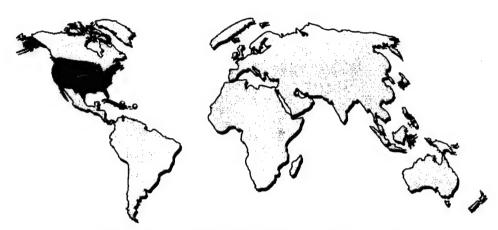
Scheduled Part 135 Injuries by Role for 1998

	Falal	Serious	Minor	None	Total
Flight Crew	0	0	2	6	8
Cabin Crew	0	0	0	0	0
Other Crew	0	0 .	0	0	0
Passengers	0	2	7	25	34
Total Aboard	0	. 2	9	31	42
On Ground	0	0	0	_	0
Total	0	2	9	31	42
Accidents	0	2	1	5	8

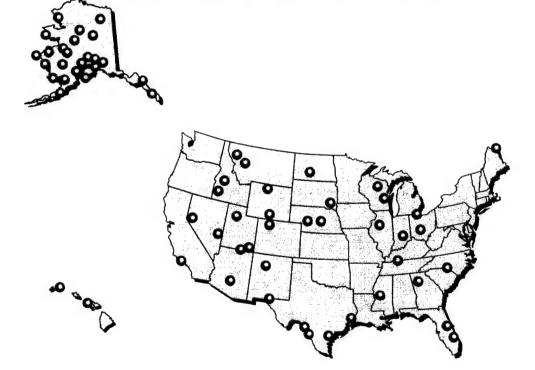


1998 Nonscheduled Part 135 Accidents

There were 77 nonscheduled Part 135 accidents in 1998 with 73 occurring in the United States. Within this group, 31, or 42.5% occurred in Alaska with the remainder distributed among the lower 49 states.



Nonscheduled Part 135 Accidents - Detail View





The majority of 1998 nonscheduled Part 135 accident aircraft had reciprocating engines (66.2%). Turboprop and turboshaft engines were used in 14.3%, and 13.0% of accident aircraft respectively whereas turbofan and turbojet engines each accounted for less than 5% of the total.

Nonscheduled Part 135 Accidents, Engine Type by Highest Injury for 1998

Highest	Day of the state o	Turbonni	Tenducehaft	Turboten	Turbolet	i dal
Injury	1					
Fatal	11	2	4	0	0	17
Serious	2	0	0	1	0	3
Minor	12	2	2	0	0	16
None	26	7	4	2	. 2	41
Total	51	11	10	3	2	77

Of the 77 nonscheduled Part 135 accidents that occurred in 1998, 66 involved airplanes and 11 involved helicopters. Of the 66 aircraft accidents, only 59 had cause/factor information available. Within this set, nonmechanical losses of engine power and inflight encounters with weather were the most frequently cited first occurrences. In addition, other engine power losses accounted for 9 other accidents in this group. For helicopter accidents, the most frequently cited first occurrence was in-flight encounters with weather. For a more detailed itemization of first occurrences, see the following table.

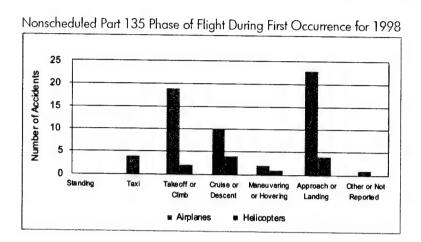
First Occurrences for Nonscheduled Part 135 Accidents in 1998

First Occurrences for Nonscheduled Part 135 First Occurrence	The second second	Helioopter
Loss Of Engine Power (Total) - Nonmechanical	8	
In Flight Encounter With Weather	6	3
Hard Landing	4	
In Flight Collision With Terrain/Water	4	
Loss Of Control - On Ground/Water	4	
Wheels Up Landing	4	
Loss Of Control - In Flight	3	1
Loss Of Engine Power	3	1
Loss Of Engine Power (Partial) - Mech Failure/Malf	3	1
Loss Of Engine Power (Total) - Mech Failure/Malf	3	2
On Ground/Water Collision With Object	3	
Airframe/Component/System Failure/Malfunction	2	1
Main Gear Collapsed	2	
Overrun	2	
Gear Collapsed	1	
In Flight Collision With Object	1	1
Loss Of Engine Power (Partial) - Nonmechanical	1	
Midair Collision	1	1
Miscellaneous/Other	1	
On Ground/Water Encounter With Terrain/Water	1	
On Ground/Water Encounter With Weather	1	
Vortex Turbulence Encountered	1	
Total	59	11

^{* 70} of 77 nonscheduled Part 135 accidents included cause/factor data.



Of the 59 nonscheduled Part 135 airplane accidents with sequence of event data, the majority of first occurrences happened during approach/landing (39.0%) or during takeoff/climb (32.2%) with a smaller number (16.9%) during cruise/descent. For the 11 helicopter accidents, there were four each during cruise/descent and approach/landing, two during takeoff/climb, and one during maneuvering/hovering.



For both nonscheduled Part 135 airplane and helicopter accidents, the pilot was the most frequently cited cause/factor. For airplanes, the next most frequently cited causes/factors were environmental factors including weather conditions and terrain conditions. However, for helicopter accidents, power plant/propulsion issues were the second most frequently cited cause/factor. In addition, for both airplanes and helicopters, several other causes/factors were cited in 1998 including other personnel not aboard, aircraft structure, and light conditions.

Nonscheduled Part 135 Accidents, Top Causes/Factors for 1998*

	Airplanes	Helicopters	
Personnel			
Pilot	79.7%	90.9%	
Others (not aboard)	16.9%	27.3%	
Others (aboard)	0.0%	0.0%	
Organizations	0.0%	9.1%	
Aircraft			
Power plant/propulsion	16.9%	36.4%	
Landing gear	11.9%	0.0%	
Fluid	11.9%	9.1%	
Aircraft structure	5.1%	9.1%	
Flight control systems	3.4%	0.0%	
Systems and equipment	1.7%	0.0%	
Aircraft performance	1.7%	0.0%	
Instruments	1.7%	0.0%	
Engine power loss	0.0%	0.0%	
Environment			
Weather condition	30.5%	27.3%	
Terrain condition	25.4%	9.1%	
Object	6.8%	18.2%	
Airport/airways facilities, aids	5.1%	0.0%	
Light condition	1.7%	18.2%	

^{* 59} airplane accidents and 11 helicopter accidents included cause/factor data

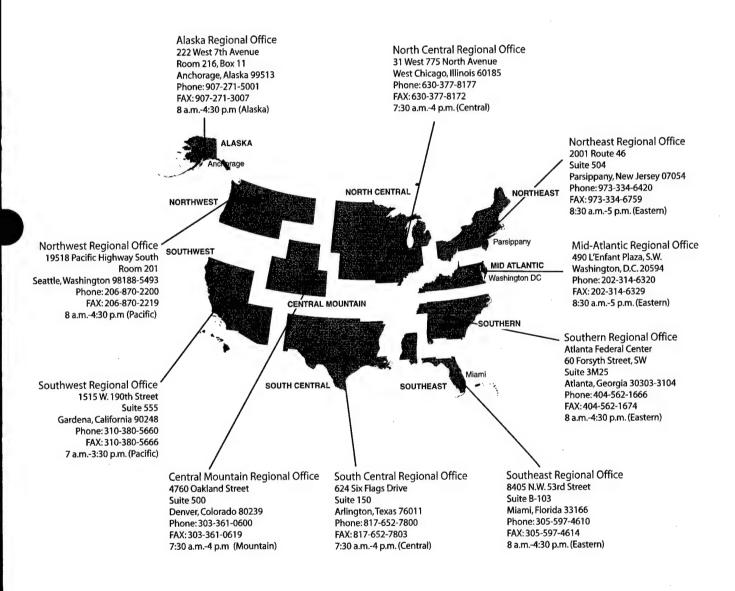
Among the 77 nonscheduled Part 135 accidents that occurred in 1998, 17 accidents resulted in 42 fatalities. In addition to these fatalities, there were 10 serious injuries and 40 minor injuries. Flight crewmembers suffered the highest percentage of injury with 50.6% of all flight crewmembers involved in accidents sustaining some level of injury. Of the 184 passengers involved in accidents, 29.3% received injuries.

Injuries by Role for Nonscheduled Part 135 Accidents in 1998

	Fatal	Senous	Minor	None	Total
Flight Crew	14	2	18	53	87
Other Crew	0	0	2	5	7
Passengers	27	7	20	130	184
Total Aboard	41	9	40	188	278
On Ground	1	1	0	-	2
Total	42	10	40	188	280
Accidents	17	3	16	41	77



NTSB REGIONAL OFFICES FOR AVIATION ACCIDENT INVESTIGATION



NTSB Forms

National Transportation Safety Board
FACTUALEPORT
AVATON

NTSB ID:	Aircraft Registration Number:	
Occurrence Date:	Most Critical Injury:	1
Occurrence Type:	Investigated By:	1

Location/Time

Nearest City/Place	State	Zip Code	Local Time	Time Zone	
Airport Proximity:	Distance From Landing Facility:		Direction F	rom Airport:	

Aircraft Information Summary

7 in oracle in oriniation outliniary					
Aircraft Manufacturer	Model/Series	Type of Aircraft			

Sightseeing Flight:

Air Medical Transport Flight:

Narrative

Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:

There is no narrative file for this case.

BEST AVAILABLE COPY

N	ational Transportation Safety Board
	FACTUAL PEPORT
	AVACTON

NTSB ID:	
Occurrence Date:	
Occurrence Type:	

NOT FOR RELEASE

irport Name		Airport ID:	·	Runway Used	Runw	ay Lengu	I Kui	nway Widt	
			· Ft. MSL						
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pe Instrument Approach	:								
FR Approach/Landing:				·				8	
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rworthiness Certificate(s):								
anding Gear Type:									
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wner/Operator Info	ormation								
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perator of Aircraft		Street	Address						
portion over the contract of		City				,	State	Zip Cod	
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ir Carrier Operating Cer	tificate(s):								
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ype of Flight Operation C									

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National Transportation Safety Board
FACTUAL BPORT
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NTSB ID: Occurrence Date:

NOT FOR RELEASE

Page 3

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Airplane	e Rating(s):													
	aft/Glider/LTA:													<u></u> .
	ent Rating(s):													
Instructo	or Rating(s):													
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Pilot In	Command(PIC)										\vdash			
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Last 30														
Last 24		<u> </u>												
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FACTUAL REPORT - AVIATION



NTSB ID:	
Occurrence Date:	
Occurrence Type:	

NOT FOR RELEASE

Veath	er Information										
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empera	ature: °C	Dew Point	••	°C	Wind	l Direct	ion:			Density Altitude:	Ft.
Wind Sp	eed:	Gusts			Wea	ther Co	ndtions at	Acci	dent Site:		
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National Transportation Safety Board	d
FACTULE PORT	
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NTSB ID:	
Occurrence Date:	

Occurrence Type:

NOT FOR RELEASE

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Investigator-In-Charge (IIC)

Additional Persons Participating in This Accident/Incident Investigation:

Printed on 04/02/2002

National Transportation Safety Board PRELIMINAL REPORT			B ID:		Most Critical Injury:			
			ırrence Date:		Investigated E	Investigated By:		
AVIALI	PΝ	Occi	urrence Type:		ICAO Report Submitted:			
ocation/Time							·	
Nearest City/Place Stat			Zip Code Local Time		Time Zone			
Aircraft Information	1							
Registration Number	Aircraft Man	ufacturer			Model/Series N	lumber		
Type of Aircraft:			Homebuilt A	∖ircraft⊡				
Irjury Summary:			Serious	Minor		None		
Sghtseeing Flight:		Air Medic	al Transport F	light:				
Narrative								
Dest parative eleterant of foots	anditions and air	oumetanoos	portinget to the a	coident/incident:	•			

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PRELIMINATE REPORT AVIATION		Occurrence Date:					_				
							_				
		Occu	irrence T	ype:							
Other Aircraft Involved Registration Number Aircraft Manufactur								Model/S	eries	Number	-
								I Woden C	01103	Number	
Accid	ent Information								-		
Aircraft	Damage: Unkno	wn		Ac	ciden	t Occurred	d Durin	ıg:			
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Pilot											
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Operati	ng Certificate:				To	Operator C	ertifica	ite:			
Regulat	ion Flight Conducte	d Under:								530	
Type of	Flight Operations C	onducted:;;									
Flight	Plan/Itinerary										
	Flight Plan Filed:										
Last D	eparture Point					State	Airpo	ort Identifier			
Destin	ation					State	Airpo	ort Identifier			
										٠	
Weath	er Information										
Investig	ator's Source:				Fac	cility ID:		Observat	ion Ti	me (Local)	:
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Lowest	Ceiling:			Ft. AGL	V	/isibility:		SM	Altir	neter:	□Hg

PRELIMINARY INFORMATION - SUBJECT TO CHANGE

Page

National Trans	8rianan	Safety Board	NTS	SB ID:		
RELIMIN	Carried Marie	REPORT	Occ	currence Date:		
AV	XI O	N	Occ	urrence Type:		
Weather Inform	nation	(Continued from	n page 2)			
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Vind Speed:	Kts	s. Gusts:	Kts.	Weather Conditions at A	ccident Site	:
dministration	Data					
otification From					Date	Local Time
AA District Office	/Coordi	nator		Investigator-In-C	harge (IIC)	

1998 PART 121 Accidents

No. 44					Π	77					arker	_		_Φ $\dot{\phi}$	3vel		
Phase of Flight	mai	:	eoff			1	=		=		Approach - final approach fix/outer marker to threshold (instrument flight rules)	Probable Cause: The failure of the flight crew to maintain a proper pitch attitude for a successful landing or go-around. Contributing to the accident were the divergent pitch oscillations of the airplane, which occurred during the final approach and were the result of an improper autopilot desensitization rate.	ormal	Probable Cause: The 1) the inoperative alternate anti-skid control valve due to the disconnected electrical connector on the parking brake shut-off valve, the area was inspected 2 days earlier 2) the total loss of the hydraulic system resulting in the inability of the flight crew to maintain directional control. Factors in the accident were the 1) inadequate lightning protection design of the airplane by the manufacturer between the horizontal and vertical stabilizers which resulted in arching damage to hydraulic lines and depletion of the hydraulic fluid from the Nos. 1 and 2 hydraulic systems 2) inadequate weather information dispatcher for failing to provide current up-to-date information of the intensity, and location of adverse weather 3) the failure of the company dispatcher to relay pertinent weather information to the flight crew while en route which included convective signets, and the current administration of the squall line 4) the operation of the airplane by the flight crew while en route which included convective signets, and the current standards/requirements, operation/operator by the company management to require weather radar depletication airport being east of the weather zero are signed to the flight crew by the airline to include convective signets for the central U.S. based on the geographic location of the destination airport being east of the weather radar boundary.	Cruise (includes low altitude straight and level flight)		ngine(s)
Phase	Cruise - norma		Taxi - to takeoff				Landing - roll		nding - ro	.4	Approach - final approach fix/oul to threshold (ins flight rules)	ie, which	Descent - normal	er betweer betweer betweer between spatcher ow within gement te some of the control of the contr	Cruise (includes low altitude straight and flight)		Standing - engine(s) operating
F are	ర్					÷			stem Lar	ug holes	App app to th	e airplan	Des	er 2) the nufacture mation capany distribution capany distribution capany distribution capany manages sigmets	Cruise altitud flight)		
First Occurrence	In flight encounter with		On ground/water collision with object			1000	On ground/water collision		Airframe/component/system Landing - roll failure/malfunction	with the I	on,	ions of th	iter with	lays earli yy the ma ither infor if the con ne by the s compar convective	ter with		Airframe/component/ system failure/malfunction
First Oc	ght encou	her	On ground/wa				On ground/wa	no]ect	Airframe/compone failure/malfunction	working	Altitude deviation, uncontrolled	th oscillat	In flight encounter with weather	ected 2 of airplane I luate were failure of airpla the airpla ator by the include of airpla ator by the airp	In flight encounter with weather		Airframe/component/ system failure/malfur
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nt Total v Fatalities	0		0		0	A same and	0		0	erhaul m	0	the dive	0	the area ion design design design design systems free weat the oper the operation in the for intine for	0		0
Accident Severity	Injury	:	Injury		Injury	const. The state of	Damage		Damage	turer's ov	Damage	ent were	Damage	off valve, g protect ydraulic; n of adve all line 4) uirement	njury	seats.	njury
Highest Injury	Serious Injury		Serious Injury		Serious Injury		None	эу.	Minor	manufaci	Minor	the accid	None	to the disconnected electrical connector on the parking brake shut-off valve, the area was inspected 2 days earlier 2) the total loss of the onal control. Factors in the accident were the 1) inadequate lightning protection design of the airplane by the manufacturer between the ulic lines and depletion of the hydraulic fluid from the Nos. 1 and 2 hydraulic systems 2) inadequate weather information disseminated to to provide current up-to-date information of the intensity, and location of adverse weather 3) the failure of the company dispatcher to relay I convective signets, and the current extent and intensity of the squall line 4) the operation of the airplane by the flight crew within 10 mile miderstorm resulting in a lightning strike 5) insufficient standards/requirements, operation/operator by the company management to require 80 the limitations of the weather products provided to the flight crew by the airline for failure to include convective sigmets for the central easten/central boundary.	Serious Injury	d in their	Serious Injury
Damage to Aircraft		* ***					Substantial	he runwa	Substantial	d in the	Substantial	uting to	Substantial	king bra adequati ne Nos. ' nsity, an tensity of ant stanc	07	t secure	05
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ıft .	Boe	fee in a p	Boe		Boe	T Same of any	Bee	ch left as	Aerc	or was th	Boel	essful lan	Fokk	ected ele actors in epletion ant up-to- gmets, ar ulting in s ins of the	Boei	ingers ar	Dono
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	Ortar	turbulenc	Phila	e-and-a	Lond	, NTSB	Sara	al from t	Wind) holes or	Chic	to mainta of an imp	Birmii	afte anti-s a flight cr ad in arch ompany while en ther rads nd requa	Reno, NV	counter	Memp
Type of Operation	Passenger	Probable Cause: Inadvertent encounter with turbulence, which resulted spil	Passenger	Probable Cause: Fallure of the tug driver to see-and-avoid the taxiing airplane.	Passenger	Probable Cause: None. Foreign Investigation, NTSB accredited represental	Passenger	Probable Cause: The inadequate snow removal from the runway by airport personnel, which left a snow bank extending onto the runway.	Passenger and Cargo	Probable Cause: The improper overhaul of lug holes on the fuel/oil heat exchanger. A factor was the lack of direction contained in the manufacturer's overhaul manual for working with the lug holes.	Passenger	Probable Cause: The failure of the flight crew to maintain a proper pitch attitude for a succ during the final approach and were the result of an improper autopilot desensitization rate	Passenger and Cargo	Probable Cause: The 1) the inoperative alternate anti-skid control valve due to the disconnected electrical connector on the parking brake shut-off valve, the area was inspected 2 days earlier 2) the total loss of the hydraulic system resulting in the inability of the flight crew to maintain directional control. Factors in the accident were the 1) inadequate lightning protection design of the airplane by the manufacturer between the horizontal and vertical stabilizers which resulted in arching damage to hydraulic lines and depletion of the hydraulic fluid from the Nos. 1 and 2 hydraulic systems 2) inadequate weather information dispatcher for failing to provide current up-to-date information of the intensity, and location of adverse weather 3) the failure of the company dispatcher to relay pertinent weather information to the flight crew white en route which included convective signets, and the current extent and intensity of the squall line 4) the operation of the airplane by the flight crew within 10 miles weather radar depicted level 5 thunderstorm resulting in a lightning strike 5) insufficient standards/requirements, operation/operator by the company management to require weather radar depictation training, and 6 the weather products provided to the flight crew by the airline to include convective signets for the central Ubased on the geographic location of the destination airport being east of the eastern/central boundary.	Passenger	Probable Cause: Unforecasted and sudden encounter with clear air turbulence when passengers and flight attendants were not secured in their seats.	o <u>ß</u>
		nt encon		the tug d		reign Inv		quate sn	Pa	per overt		of the fli d were th		inoperative in the inablicers while the first while in the first or the figure of the first or t	Pas	ed and s	Cargo
Registration Number	N618DL	Inadverte	N845AA	allure of	N653UA	Vone. For	N854CA	he inade	N15827	he impro	N845AA	he failure roach an	N867US	he 1) the sculting in cal stabiling in formation dge of a 4 gaphic local sphic	N746AS	nforecast	N303FE
1	866	Cause: 1	866	Cause: F	968	Cause: 1	1998	Cause: T	8661	Cause: Ti	866	Sause: Ti final app	1998	Sause: TI system re and vertin during th reather in orthern ex dar trainis	ø.	ause: Ur	
Date	January 6, 1998	robable	January 6, 1998	robable	January 9, 1998	robable	January 20, 1998	robable (January 21, 1998	robable (February 9, 1998	robable (February 26, 1998	robable (/draulic s prizontal ght crew syrtinent w ym the nc sather ra ssed on ti	March 4, 1998	obable C	March 6, 1998
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Date	Registration Number	n Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident T Severity Fat	Total First Occurrence	Phase of Flight
March 9, 1998	N937CA	Passenger	Covington, KY	Comair doing business as Delta Connection	Canadair CL600-2B19	Substantial	Minor [Damage 0	On ground/water collision with object	Standing
Probable Cause	: The driver's of	peration of a gro	ound vehicle at night	with an inoperative windsh	ield wiper and an obscure	d windscreen	against co	mpany regula	Probable Cause: The driver's operation of a ground vehicle at night with an inoperative windshield wiper and an obscured windscreen against company regulations which resulted in a collision with a parked aircraft.	with a parked aircraft.
March 11, 1998	N730C	Passenger	Tyler, TX	Austin Express	Fairchild SA227-AC	Substantial None		Damage 0	On ground/water collision with object	Taxi - from landing
Probable Cause	The fallure of t	the golf cart's dr	Probable Cause: The failure of the golf cart's driver to shutdown the engine a	engine and set the parkin	nd set the parking brake before exiting, which resulted in an unmanned runaway cart	ich resulted in	an unman	ned runaway	cart.	en fallen a Mariana de enatitivação de Mariana.
March 11, 1998	N863US	Passenger	Philadelphia, PA	US Airways	Fokker F-100	Substantial	Serious Serious	Serious 0	On ground/water collision with object	Standing - engine(s) operating
Probable Cause	: The driver's fa	illure to maintain	Probable Cause: The driver's failure to maintain clearance from the parked ai	parked airplane. Related	iplane. Related factors were night conditions and the driver's diverted attention.	ins and the dri	ver's diver	ted attention.		
April 4, 1998	N68053	Cargo	Memphis, TN	Federal Express	Douglas DC-10-10F	Substantial None		Damage 0	On ground/water collision with object	Taxi - pushback/tow
Probable Cause	: The tug opera	tor's (maintenan	nce representative) i	Probable Cause: The tug operator's (maintenance representative) inadequate visual lookout during pushback.	uring pushback.	en en engelse et es ense jugar en	washing to said in	Di Vicentina de Signi al Carlos	The second secon	مكن علقة المستعددة المستعددة المستعددة والمستعددة المستعددة المستعدد المستعدد المستعدد
April 18, 1998	N623FF	Passenger and Cargo	Atlantic Ocean	Tower Air	Boeing 747-200	Minor	Serious Injury	njury 0	In flight encounter with weather	Cruise - normal
Probable Cause	: The injured pa	ssengers failure	e to follow the directi	Probable Cause. The injured passengers failure to follow the directions to fasten their seat belts, prior to an encounter with clear air turbulence.	its, prior to an encounter w	/ith clear air tu	rbulence.	sheladahan kandi salikali sa	Sanda de Maria de Maria de Maria de Carta de Car	respondent to the state of the second of the
April 19, 1998	N722AA	Passenger	Chicago, IL	American Airlines	Boeing 727-227	Minor	Serious Injury	njury 0	Fire	Standing - starting engine(s)
Probable Cause	: The passenge	r initiated evacu	Probable Cause: The passenger initiated evacuation of the airplane. A factor		was the auxiliary power unit fire.	artinisticality are combined these that it was an	And the Carlot and the	todinar men medicardine ditress	akoo ka aa ja aa ja aa ja aa ja sa ja sa ka sa	Table of the section of the section of
May 7, 1998	N948VV	Passenger	Calhoun, GA	AirTran Airways	Douglas DC-9-32	Substantial	Serious Serious	Serious 0	In flight encounter with weather	Climb - to cruise
Probable Cause: The crewmember training of hail and turbulence	s: The failure of aining and guida ilence.	the flight crew to ince regarding h	o maintain adequate	separation from hazardou snoounters; (2) the failure o	s meteorological condition if the flight crew to provide	is. Factors con an adequate	itributing to and timely	the accident briefing to the	Probable Cause: The failure of the flight crew to maintain adequate separation from hazardous meteorological conditions. Factors contributing to the accident were: (1) the failure of AirTran Airlines to provide adequate crewmember training and guidance regarding hazardous weather encounters; (2) the failure of the flight crew to provide an adequate and timely briefing to the flight attendants regarding turbulence; and (3) the presence of hail and turbulence.	rlines to provide adequate ence; and (3) the presence
May 11, 1998	N179UA	Passenger	Narita, Japan	United Airlines	Boeing 747	None	Serious Injury	Injury		
Probable Cause: None. Foreign investigation.	3: None. Foreig	yn investigation.		Parties of the second of the s		and State and the second	the second state of the	And the second of the second of	A service of the service of the self-self-self-self-self-self-self-self-	Frankling & belong the rest of the second state of the second state of
May 13, 1998	N1400H	Passenger	Ft. Wayne, IN	American Airlines	Fokker F-28 MK100	None	Serious Injury	Injury 0	Altitude deviation, uncontrolled	Descent
bable Caus	e: In-flight encou	obable Cause: In-flight encounter with turbulence.	ence.	de la companya de la gagada de la Companya de la Co	daulika a v kana a bahar da a akama bakka	and the first of t	Walter State Commence	estidad registration in antico	e de referenciado de la comerción de la comerc	reacher of building and a second control of the control of
May 21, 1998	N68043	Passenger	Los Angeles, CA	Contine	McDonnell Douglas DC-10-10	None	Serious Injury	Injury 0	Altitude deviation, uncontrolled	Climb - to cruise
Probable Cause: Tr recovery by the cap assurance program	s: The contamin captain. Contri	lated strain gage buting factors w	Probable Cause: The contaminated strain gage, which resulted in shorting of recovery by the captain. Contributing factors were the failure of the airline massurance program.	shorting of the strain gage's airline maintenance depa	s terminal lugs which lead rtment to diagnose and co	to excessive a rrect a historic	utopilot in al problen	itiated elevato with the auto	Probable Cause. The contaminated strain gage, which resulted in shorting of the strain gage's terminal lugs which lead to excessive autopilot initiated elevator movement, and excessive elevator actuation during recovery by the captain. Contributing factors were the failure of the airline maintenance department to diagnose and correct a historical problem with the autopilot system and the manufacturer's inadequate quality assurance program.	tor actuation during
May 24, 1998	N619AU	Passenger	Wichita, KS	US Airways	Boeing 757-2B7	None	Serious Injury	Injury 0	In flight encounter with weather	Cruise (includes low altitude straight and level flight)
Probable Cause	s: The severe tu	inpulence encou	ntered as a result of	f the flightcrew's inadverten	it flight into a rapidly devel	oping thunder	storm.	a distance of the second second	Probable Cause: The severe turbulence encountered as a result of the flightcrew's inadvertent flight into a rapidly developing thunderstorm.	

Date	Registration Number	n Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Total Severity Fatalities	l es First Occurrence	Phase of Flight
June 17, 1998 Probable Cause: by the airline; inat	N364UA Inadequate vi	Passenger sual lookout by catering truck d	Denver, CO ground personnel (t friver, and failure of	ne 17, 1998 N364UA Passenger Denver, CO United Airlines Boeing 737-322 Substantial Minor Probable Cause: Inadequate visual lookout by ground personnel (tug operator). Factors include failure of the airline to provide proper assista by the airline; inattention of the catering truck driver, and failure of the flight crew to illuminate the rotating beacon prior to or during pushback.	Boeing 737-322 ide failure of the airline to the rotating beacon prior the	Substantial Minor provide proper assists to or during pushback	Minor assistanc shback.	Damage 0	ne 17, 1998 N364UA Passenger Denver, CO United Airlines Boeing 737-322 Substantial Minor Damage 0 On ground/water collision Taxi - pushback/tow with object with object Probable Cause: Inadequate visual lookout by ground personnel (tug operator). Factors include failure of the airline to provide proper assistance (wing walkers) to the tug operator, and inadequate pushback procedures by the airline; inattention of the catering truck driver, and failure of the flight crew to illuminate the rotating beacon prior to or during pushback.	Taxi - pushback/tow uate pushback procedures
June 26, 1998 Probable Cause:	N402LC The pilot's fail	Cargo ure to maintain	Huslia, AK proper alignment of	re 26, 1998 N402LC Cargo Huslia, AK Lynden Air Cargo Lockhe. Probable Cause: The pilot's failure to maintain proper alignment of the airplane during the landing roll.	Lockheed L-382G ding roll.	Substantial None	None	Damage 0	On ground/water collision with object	Landing - roll
July 22, 1998 Probable Cause:	N335AA In-flight encou	y 22, 1998 N335AA Passenger Per Probable Cause: In-flight encounter with turbulence.	Peotone, IL lence.	American Airlines	Boeing 767-223	None	Serious Injury	Injury 0	Altitude deviation, uncontrolled	Climb - to cruise
July 27, 1998 Probable Cause:	N449YV The inadequal	Passenger te chocks and in	Telluride, CO nadequate chocking	y 27, 1998 N449YV Passenger Telluride, CO Mesa Air Group doing Dehavilland DH-8-202 Substantial None Damage 0 on business as America West Vest Probable Cause: The inadequate chocks and inadequate chocking procedures by the operator. Factors were the unavailability of the parking brake and sloping terrain.	Dehavilland DH-8-202	Substantial None	None parking b	Damage 0 rake and sloping to	On ground/water collision with object strain.	Other
August 8, 1998 Probable Cause:	N302ML The failure of t	Passenger the flight crew to	Denver, CO o comply with brakin	gust 8, 1998 N302ML Passenger Denver, CO Prime Air doing business Airbus Industrie A-320- Nor as Transmeridan Airlines 231 Probable Cause: The faiture of the flight crew to comply with braking instructions after being instructed by ground personnel.	Prime Air doing business Airbus Industrie A-320- as Transmeridan Airlines 231 instructions after being instructed by ground persor	None nnel.	Serious Injury	Injury 0	On ground/water collision with object	Taxi (includes runaway while hand-propping)
August 14, 1998 Probable Cause:	N799AS The flight crew	Passenger	gust 14, 1998 N799AS Passenger Juneau, AK Alaska Air Probable Cause: The flight crew's inadequate recovery from a bounced landing.	Alaska Airlines nced landing.	Boeing 737-400	Substantial None	None	Damage 0	Dragged wing, rotor, pod, float or tail/skid	Landing - flare/touchdown
August 19, 1998 Probable Cause: [N251ZV Debonding of t	Passenger the propeller erc	gust 19, 1998 N251ZV Passenger Denver, CO Great Lal doing bus United Ey United Ey Probable Cause: Debonding of the propeller erosion shield due to an improper	Great Lakes Aviation doing business as United Express an improper overhaul and re	ves Aviation Beech 1900D Substantial siness as press overhaul and repair by other maintenance personnel.	i	Minor	Damage 0	Airframe/component/system Takeoff - initial climb (to failure/ malfunction first power reduction or pattern altitude; includes crosswind leg)	Takeoff - initial climb (to first power reduction or pattern attitude; includes crosswind leg)
August 31, 1998 Probable Cause: h	N722DH None, Investi	Cargo gation not comp	gust 31, 1998 N722DH Cargo Jamaica, NY DHI. Probable Cause: None. Investigation not complete at time of publication.	DHL Airways ication.	Boeing 727-200	Substantial	None	Damage 0		
September 2, 1998 Probable Cause: 1	N927VJ The failure of the	Passenger and Cargo he fuel truck dri plane from the	Philadelphia, PA iver to follow airport fuel truck, and the la	ptember 2, 1998 N927VJ Passenger Philadelphia, PA USAIR Douglas DC-9-30 Substantial None Damage 0 and Cargo Probable Cause: The failure of the fuel truck driver to follow airport operating procedures, and yield the right-of-way to the airplane. Factors were the stopped a airplane and the approaching airplane from the fuel truck, and the lack of visual aids on the vehicle to help compensate for restricted driver visibility to the right.	Douglas DC-9-30 yield the right-of-way to th hicle to help compensate f	Substantial None e airplane. Factors or restricted driver v	None ctors wer iver visibi	Damage 0 re the stopped airpility to the right.	ptember 2, 1998 N927VJ Passenger Philadelphia, PA USAIR Douglas DC-9-30 Substantial None Damage 0 On ground/water collision Taxi - from landing and Cargo with object Probable Cause: The failure of the fuel truck driver to follow airport operating procedures, and yield the right-of-way to the airplane. Factors were the stopped airplane, which obscured the fuel truck from the approaching airplane from the fuel truck, and the lack of visual aids on the vehicle to help compensate for restricted driver visibility to the right.	Taxi - from landing ruck from the approaching
September 11, 1998 N316UP Probable Cause: None. Inve	N316UP Vone. Investig	Cargo gation not comp	SUP Cargo Houston, TX Unite Investigation not complete at time of publication.	United Parcel Service Ication.	Boeing 767-34AF	Substantial None		Damage 0		
September 16, 1998 N20643 Probable Cause: None. Fo	N20643 Vone. Foreign	Passenger and Cargo n investigation,	Guadalajara, Mexico NTSB accredited re	ptember 16, 1998 N20643 Passenger Guadalajara, Continental Airlines and Cargo Mexico Mexico Probable Cause: None. Foreign investigation, NTSB accredited representative present.	Boeing 737-524	Substantial None		Damage 0		
September 17, 1998 N233RM Probable Cause: The wake to	N233RM The wake turbu	Passenger ulence encounte	ptember 17, 1998 N233RM Passenger Chicago, IL Probable Cause: The wake turbulence encountered by Flight 146.	American Eagle	Aerospatiale ATR-42-300	None	Serious Injury	njury 0	Vortex turbulence encountered	Approach
September 20, 1998	N650AA	Passenger	La Paz, Bolivia	American Airlines	Boeing 757-223	Substantial	None	Damage 0		

Date	Registration Number	n Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Accident Total Severity Fatalities	ial First Occurrence	Phase of Flight
Probable Cause: None. Foreign investigation.	None. Foreig	n investigation.								
September 24, 1998 N91237	3 N91237	Cargo	Loiza, PR	Trans Florida Airlines	Convair 240	Substantial	None	Damage 0	Loss of engine power	Takeoff - initial climb (to first power reduction or pattern altitude; includes crosswind leg)
September 27, 1998 N810EX Passe Probable Cause: Clear air turbulence	The loss of post N810EX	Passenger Pance	Z engine for undeterm Islip, NY	nined reasons, and the inability of the pilot to e Allegheny Airlines, doing Boeing DHC-8-102 business as US Airways Express	bility of the pilot to estab Boeing DHC-8-102	lish a climb and Minor	Serious Injury	ain attitude. A fa Injury 0	Seriouse: The loss of power in the No. 2 engine for undetermined reasons, and the inability of the pilot to establish a climb and/or maintain affitude. A factor was the incompletely feathered No. 2 propeller. Mber 27, 1998 N810EX Passenger Islip, NY Allegheny Airlines, doing Boeing DHC-8-102 Minor Serious Injury 0 In flight encounter with Approach business as US Airways Express Express	Approach
October 4, 1998 N1200K Passenger and Cargo Probable Cause: None. Foreign investigation.	None. Foreig	Passenger and Cargo gn investigation.	Sao Paulo, Brazil	Delta Air Lines	Boeing 767-332	None	Serious Injury	Injury 0	The second secon	
October 7, 1998	N66734	Passenger	Miami, FL	Continental Airlines	Boeing 727-224	Substantial	None	Damage 0	Loss of engine power (partial) - mechanical failure/malfunction	Takeoff - roll/run (ground or water)
Probable Cause: company that las unauthorized rep contributing to the	I he catastrop it plated the dis air vendor, the e accident was	onic failure of the sk. Contributing plating compan the aircraft ope	Probable Cause: The catastrophic failure of the 6th stage high pressure company that last plated the disk. Contributing to the accident was the failur unauthorized repair vendor, the plating company, and the engine repair comcontributing to the accident was the aircraft operators failure to audit the eng	sure compressor disk from he failure of the engine rep pair companies failure to in the engine repair compan	cadmium emonument pair company to provide a from the aircraft operato by to the level of detail the	as a result of it adequate surve ir that they had at they would h	inproper a sillance an used the [ave discov	difference to the displaying company plating company rered the engine	Probable Cause: The carastrophic failure of the 6th stage high pressure compressor disk from cadmium emortiement as a resurt of improper adherence to the prescribed planing procedures and requirements by the company that last plated the disk. Contributing to the accident was the failure of the engine repair company to provide adequate surveillance and oversight of the plating company, the engine repair companies tailure to inform the aircraft operators that they had used the plating company, and the engine repair companies failure to inform the aircraft operators vendor list. Also contributing to the accident was the aircraft operators failure to audit the engine repair company to the level of detail that they would have discovered the engine repair an unauthorized repair vendor.	and requirements by the repair companies use of an pperators vendor list. Also unauthorized repair vendor.
October 11, 1998 Probable Cause:	N997DL The tug driver	Passenger and Cargo	tober 11, 1998 N997DL Passenger Covington, KY Delta / and Cargo Probable Cause: The tug driver's failure to maintain a proper visual lookout.	Delta Air Lines Iookout.	McDonnell Douglas MD-88	Substantial None		Damage 0	On ground/water collision with object	Taxi - to takeoff
October 25, 1998 Probable Cause:	N143DD The pilot's fall	Passenger and Cargo lure to verify that	San Juan, PR t the parking brake w	Executive Airlines doing business as American Eagle Airlines as applied prior to engine	Aerospatiale ATR-42-300 start, and the resultant in	Substantial Minor	Minor ement of t	Damage 0 he aircraft and c	tober 25, 1998 N143DD Passenger San Juan, PR Executive Airlines doing Aerospatiale Substantial Minor Damage 0 On ground/water collision Standing - engine(s) and Cargo Eagle Airlines Eagle Airlines Probable Cause: The pilot's failure to verify that the parking brake was applied prior to engine start, and the resultant inadvertent movement of the aircraft and collision with the ground power cart once No. 2 was started.	Standing - engine(s) operating cart once No. 2 was started.
November 1, 1998 Probable Cause:	EICJW None. Invest	Passenger tigation not com	vember 1, 1998 EICJW Passenger Atlanta, GA AirTra Probable Cause: None. Investigation not complete at time of publication.	AirTran	Boeing 737-200	Substantial	Minor	Damage 0		
November 3, 1998	N325PX	Passenger	Memphis, TN	vember 3, 1998 N325PX Passenger Memphis, TN Express Airlines One Saab-Scania Minor Fatal Seri doing business as AB (Saab) 340A Northwest Airlink	Saab-Scania AB (Saab) 340A	Minor	Fatal	Serious 1	Miscellaneous/other	Standing - engine(s) operating
November 3, 1998 N919DL Probable Cause: The driver he approached the airplane.	N919DL N919DL The driver's fa	Passenger and Cargo	vember 3, 1998 N919DL Passenger Covington, KY Delta / and Cargo Probable Cause: The driver's failure to maintain control of the belt loader. A he approached the airplane.	Delta Airlines ader. A factor in the accid	McDonnell Douglas MD-88 dent was the precipitation	Minor Ninor Ninor	Serious Injury	Injury 0 uted to the drive	infines McDonnell Douglas Minor Serious Injury 0 Miscellaneous/other Standing MD-88 MD-88 factor in the accident was the precipitation which may have contributed to the driver's foot slipping off the brake and onto the accelerator, as	Standing nd onto the accelerator, as
November 11, 1998 N784UA Passenger	3 N784UA	Passenger	Concepcion, Bolivia	United Air Lines	Boeing 777-222B	None	Serious Injury	Injury 0	Birth Committee	
Probable Cause.	None. Fore	gn investigation								

Date	Registration Number	n Type of Operation	Location	Operator of Arroraft	Aircraft Type	Damage to Aircraft		Highest Accident Injury Severity	Accident Total Severity Fatalities	First Occurrence	Phase of Flight
November 11, 1998 N801DE	N801DE	Passenger	Portland, OR	Delta Air Lines	McDonnell Douglas MD-11	Substantial	None	Damage	0	Dragged wing, rotor, pod, float or tail/skid	Landing - flare/touchdown
Probable Cause: The fight crew's enti- high attitude through the landing flare.	The flight crew ugh the landing	's entry of an ir i flere.	Probable Cause: The flight crew's entry of an incorrect weight figure in the Filiph etitlade through the landing flare.	in the Flight Managemen	t System (FMS) compute	rr, resculting in t	е арргов	ich being	Nown at a	ht Management System (FMS) computer, resulting in the approach being frown at an improper (low) Vref speed and an excessively nose-	and an excessively nose-
December 1, 1998	N414WF	Passenger	Fort Lauderdale, FL	American Eagle	Aerospatiale ATR-72-212	None	Serious Injury	Injury	0	Abrupt maneuver	Cruise (includes low altitude straight and level flight)
Probable Cause:	An abrupt man	euver in respo	nse to a traffic avoids	Probable Cause. An abrupt maneuver in response to a traffic avoidance system alert, resulting in a flight attendant failing and breaking a leg.) in a flight attendant falls	ng and breakin	galeg.	Sant Bandoner Sales The co	desirable and the particular section of	A Valida september liperatur restant a libera. A contrat extratabilità contrata està attanuatura	members with the first the effects of the first three for three first three for the first three first three for the first three for the first three fi
December 1, 1998	N621FF	Cargo	Miami, FL	Tower Air	Boeing 747-259B	Substantial None	None	Damage	0	Fire	Standing - engine(s) not operating
Probable Cause:	A fire that start	ed under the fu	Probable Cause: A fire that started under the fuel truck's cab from an undeterm	n undetermined fuel leak, I	nined fuel leak, resulting in fire damage to the airplane	o the airplane.	white water	Pade a ster acres est.	Seator Calence and the See	ATTAN II	The Court and we have the second the second the second
December 13, 1998 N328AW	N328AW	Passenger	Sacramento, CA America	America West Airlines	Boeing 737-300	None	Serious Injury	Injury	0	In flight encounter with weather	Descent
Probable Cause:	The failure of ti	he second and	Probable Cause: The failure of the second and third flight attendants to comply		with instructions to remain seated in anticipation of turbulence.	ticipation of tun	Sulence.	Catherine of which we indicated	industrial and property of the contraction of the c	for the second progress of the second	
December 17, 1998 N47AE	N47AE	Passenger	Traverse City, MI American	American Eagle	Aerospatiale ATR-42-300	Substantial	None	Damage	0	Loss of control - on ground/water	Landing - roll
Probable Cause: Factors were the	The crew's failt snow covered r	ure to execute a	Probable Cause: The crew's failure to execute a missed approach and the flyir Factors were the snow covered runway/landing area and the night conditions.	nd the flying pilot's (captail onditions.	n) failure to maintain dire	ctional control	upon touc	thdown wi	th a seven	Probable Cause. The crew's failure to execute a missed approach and the flying pilot's (captain) failure to maintain directional control upon touchdown with a seven degree left bank and a right quartering tailwind. Factors were the snow covered runway/landing area and the night conditions.	
December 21, 1998 N269FE	N269FE	Cargo	Denver, CO	Federal Express	Boeing 727-233	Substantial	None	Damage	0	On ground/water collision with object	Taxi - pushback/tow
Probable Cause: Snow removal not done by other person.	Snow removal	not done by off	1	STATES OF THE ST	ender tradition and an ender the rest trade are some interpretation of the	a colonial de l'augul ancient à coloni	را واستان المعاملة أن والميارات والمدا	e Milaton Military	Participation of the second	e wide of appropriate Revenue	e entitament from the est datable republishen out of "all throws in minimum to constitutions" stand
December 26, 1998 N907DE	N907DE	Passenger and Cargo	DFW Airport, TX	Delta Air Lines	McDonnell Douglas MD-88	None	Serious Injury	Injury	0	Fire	Standing - engine(s) operating
Probable Cause:	A passenger su	stained a hairl	ine fracture during ar	Probable Cause: A passenger sustained a hairline fracture during an emergency evacuation of the airplane.	f the airplane.	eachtraideadhail sa a Ceathair ann an An	Y arker a more ideals	traditatión index grabiticani m	official colds (Calendary)	entra de mentalmentra construir a persona esta esta en la constanta de la cons	a sa

1998 SCHEDULED PART 135 ACCIDENTS

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
February 24, 1998	N81844	Passenger	Kongiganak, AK	Peninsula Airways	Piper PA-32-300	Substantial	None	0	Undershoot	Approach - VFR pattern - final approach
Probable Cause:	The pilot misjud	yed distance/altil	lude and airspeed, a	Probable Cause: The pilot misjudged distance/altitude and airspeed, and his delay initiating a go-around. Related factors were the downdraft and snowbank.	und. Related factor	rs were the do	Andraft and	snowbank.		
April 15, 1998	N22932	Passenger	Dutch Harbor, AK	Peninsula Airways doing business as PenAir	Grumman G-21	Substantial	None	0	On ground/water encounter with terrain/water	Landing
Probable Cause:	The pilot-in-com	mand's failure to	identify the swells p	Probable Cause: The pilot-in-command's failure to identify the swells prior to landing. A factor was the water swells.	ne water swells.					
May 14, 1998	N192AV	Passenger	Nome, AK	Baker Aviation	Cessna 208	Substantial	Serions	0	In flight collision with terrain/water	Maneuvering - turn to reverse direction
Probable Cause:	The pilot's contir	ived VFR flight in	Probable Cause: The pilot's continued VFR flight into instrument meteorolog	prological conditions. Factors in the accident were low cellings, whiteout conditions, and snow covered terrain	in the accident were	low ceilings,	whiteout con	ditions, and s	snow covered terrain.	
May 21, 1998	N755AB	Passenger	Quinhagak, AK	Yute Air Alaska	Cessna 207	Substantial	None	0	In flight collision with object	Takeoff
Probable Cause: The pilot's failure to maintain d rough and uneven runway surface with potholes	The pilot's failure runway surface	to maintain dire with potholes.	ectional control of the	Probable Cause: The pilot's failure to maintain directional control of the airplane, and his premature liftoff, resulting in a collision with a runway light fixture. Factors in the accident were wet runway conditions, and a rough and uneven runway surface with potholes.	iftoff, resulting in a c	collision with a	runway light	fixture. Fact	ors in the accident were	
June 9, 1998	N96AK	Passenger	Juneau, AK	Alaska Juneau Aeronautics doing business as Wings of Alaska	Cessna 207A	Substantial	None	0	Airframe/component/ system failure/ malfunction	Climb - to cruise
Probable Cause: associated with the	The failure of cone accident was or	npany maintena company mainter	Probable Cause: The failure of company maintenance personnel to properly associated with the accident was company maintenance personnel's failure t	Probable Cause: The failure of company maintenance personnel to properly install a wire bundle clamp; chafing, electrical arcing, and associated with the accident was company maintenance personnel's failure to discover a missing clamp during a 100-hour inspection.	πp; chafing, electric mp during a 100-ho	al arcing, and ur inspection.	subsequent	leaking of a fi	install a wire bundle clamp; chafing, electrical arcing, and subsequent leaking of a fuel line, which resulted in an in-flight fire. A factor to discover a missing clamp during a 100-hour inspection.	
September 17, 1998	N4112D	Passenger	Noorvik, AK	Bering Air	Piper PA-31-350	Substantial	None	0	Wheels up landing	Landing - flare/touchdown
Probable Cause: /	A failure of the p	lot to follow the	aircraft checklist, and	Probable Cause: A failure of the pilot to follow the aircraft checklist, and an inadvertent wheels up landing.	ding.					
October 25, 1998	N9400M	Passenger	Noorvik, AK	Hageland Aviation Services Cessna 207A	Cessna 207A	Substantial	Minor	0	In flight collision with terrain/water	Cruise (includes low altitude straight and level flight)
Probable Cause:	The pilot's contin	ued VFR flight ir	Probable Cause: The pilot's continued VFR flight into instrument meteorologi	prological conditions. Factors in the accident were a dark night and low ceilings.	in the accident were	a dark night a	ind low ceilin	gs.		
December 17, 1998	N1764U	Passenger and Cargo	Passenger and Manokotak, AK Cargo	Yute Air Alaska	Cessna 207A	Substantial	Serious	0	In flight collision with terrain/water	Cruise (includes low altitude straight and level flight)
Probable Cause:	The pilot's contin	ued VFR flight ir	nto instrument meteo	Probable Cause: The pilot's continued VFR flight into instrument meteorological conditions. Factors in the accident were dark night conditions, snow covered terrain, and low ceilings	in the accident were	dark night co	ditions, sno	w covered ter	rain, and low ceilings.	

1998 Nonscheduled Part 135 Accidents

Phase of Flight	Taxi (includes runaway while hand-propping)	an. Takeoff - initial climb (to first power reduction or pattern attitude; includes crosswind leg)	e: darkness, heavy snow,	Landing - flare/fouchdown	nto icing conditions, and the	Climb - to cruise	stall. Contributing factors			Cruise (includes low altitude straight and level flight)	יון פונט ופעפן וווקחון	Takeoff - initial climb (to first	altitude; includes crosswind leg)	personnel, and the pilot's	- to cruise	on to continue to use the	Taxi - from landing		Cruise - normal	nt were; flight into clouds, cockpit.
First Occurrence	nuary 8, 1998 N752JX Passenger Phoenix, AZ Native American Air British Substantial None 0 On ground/water collision Taxi Ambulance Aerospace Jetstream 3101 Probable Cause: The plot's exercising poor indoment to continue to taxi under a covered Thanas during nichtline with proper decrease.	reditive herger and the and all. In flight encounter with Take weather power	Related factor	nard landing Land	ed to an inadvertent stall and hard landing. Factors contributing to this accident were the pilot's inadvertent flight into icing conditions, and the	In flight encounter with Climb weather	ice accumulation to the extent that degraded aircraft performance and insufficient airspeed occurred followed by a stall. Contributing factors			Loss of engine power (total) Cruis		Loss of engine power Taked		Probable Cause: A fatigue failure, and partial separation of the number 6 engine cylinder head assembly, the operator's inadequate progressive inspection performed by company maintenance personnel, and the pilot's inadvertent stall during a maneuvering turn toward an emergency landing area.	Loss of engine power (total) Climb - to cruise - nonmechanical	A factor associated with this accident was the pilot's decision to continue to use the tending.	n ground/water collision ith object	ø	In flight encounter with Cruise weather	Probable Cause: The pilot did not maintain control of the airplane due to undetected airframe ice, resulting in an inadvertent stall, and subsequent impact with the ground. Factors in this accident were: flight into clouds, below freezing temperatures, and the inability of the pilot to detect ice, due to the lack of an ice detection system to determine ice build up on portions of the airframe that are not visible from the cockpit.
Total Fatalities	0	4	de from mount	o	o this accident	0	and insufficie	0		0		-		inspection pe	0	sociated with	0	airport facilitie		nt impact with
Highest Injury	None	Fatal	ce or affituc	NO N	ontributing t	Minor	erformance	None		None		Fatal		progressive	None	A factor as tending.	None	inadequate	Fatal	enbesdus p
Damage to Aircraft	Substantial	Destroyed	officient clearan in.	Substantial	Jing. Factors co	Destroyed	graded aircraft p	Substantial		Substantial	ne power.	Destroyed		or's inadequate	Substantial	is encountered. gear not fully ex	Substantial	conditions, and i	Destroyed	vertent stall, and etermine ice bui
Aircraft Type	British Aerospace Jetstream 3101	Bell 222UT	lity) to maintain s nountainous terra	Dessua 2000	itall and hard land	Cessna 208A	ne extent that deg	Learjet 36A		Piper PA-31-350 Substantial	quent loss of engi	Cessna 207		imbly, the operate	Piper PA-23-250 Substantial	ill/mush which wa	Piper PA-32-300 Substantial	were flat lighting		sulting in an inad
Operator of Aircraft	Native American Air Ambulance	Air Methods E	Probable Cause: Flight by the pilot into known adverse weather conditions, and his failure (or inability) to maintain suff high winds, the pilot's perception of pressure that was induced by the conditions and events, and mountainous terrain. It is not a property of the pilot's perception of pressure that was induced by the conditions and events, and mountainous terrain.	doing business as Federal Express		Peninsula Airways doing Cessna 208A business as PenAir		ical Jets national		Larry's Flying Service P	Probable Cause: The pilot's poor in-flight planning/decision which led to fuel exhaustion and subsequent loss of engine power.	South Central Air C		6 engine cylinder head asse ig area.	Gail Force P	Probable Cause: An improper preflight inspection of the airplane by the pilot and the inadvertant stall/mush which was encountered. A factor emergency hydraulic hand pump rather than the CO2 bottle to extend the landing gear which resulted in the landing gear not fully extending.	King Air P	Probable Cause: The pilot's failure to maintain an adequate visual lookout. Factors in the accident were flat lighting conditions, and inadequate airport facilities.	Baron Aviation Services Cessna 208B doing business as Federal Express	undetected airframe ice, resure to the lack of an ice detection
Location	Phoenix, AZ	Sandy, UT	adverse weather condition at was induced by the conditional legand. NE	משום משום משום משום משום משום משום משום	Probable Cause: Ice build-up on the airplane's wings and empennage which icing conditions.	Port Heiden, AK	Probable Cause: The pilot's inadequate in-flight decision resulting in airframe were freezing rain and icing conditions.	Al Manamah, Bahrain Med Inter		Nome, AK	ng/decision which led to	Homer, AK		Probable Cause: A fatigue failure, and partial separation of the number 6 engin inadvertent stall during a maneuvering turn toward an emergency landing area.	Peoria, IL	n of the airplane by the CO2 bottle to extend th	Naknek, AK	n adequate visual looko	Clarksville, TN	Probable Cause: The pilot did not maintain control of the airplane due to undet below freezing temperatures, and the inability of the pilot to detect ice, due to t
Type of Operation	Passenger dising poor ind	Passenger	of pressure the	S	the airplane's v	Cargo	equate in-flight itions.	Passenger	investigation.	Passenger	in-flight plannir	Cargo	ST CARMINAL	and partial se ering turn towa	Cargo	flight inspection ather than the	Passenger	to maintain a	Cargo	maintain contri the inability of
Registration Number	N752JX The pilot's exer	N222UH	Flight by the pilc lot's perception N738FX		ce build-up on t	N9316F	The pilot's inade and icing condi	N27MJ	Vone. Foreign	N7678L	he pilot's poor	N91029		\ fatigue failure, ıring a maneuv€	N54231	in improper prei	N38186	he pilot's failure	N840FE	he pilot did not peratures, and
Date	January 8, 1998 Probable Cause:	January 11, 1998	high winds, the pil		Probable Cause: I icing conditions.	January 30, 1998	Probable Cause: The pilot's inadequate were freezing rain and icing conditions.	February 1, 1998	Probable Cause: None. Foreign investigation.	February 6, 1998	Probable Cause: 1	February 6, 1998		Probable Cause: Finadvertent stall du	February 23, 1998	Probable Cause: A emergency hydrau	February 26, 1998 N38186	Probable Cause: T	March 5, 1998	Probable Cause: T below freezing tem

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	S First Occurrence	Phase of Flight
March 19, 1998	N8274M	Passenger	Fallon, NV	Fallon Airmotive	Cessna 210K	Substantial	None 0		Loss of engine power (total) Takeoff - initial climb (to first power reduction or pattern failure/malfunction altitude; includes crosswind	Takeoff - initial climb (to first power reduction or pattern altitude; includes crosswind leg)
Probable Cause: The aircraft work by the A & P mechanic.	The aircraft own:	er/pilot's improj	Probable Cause: The aircraft owner/pilot's improper assembly of the engine work by the A & P mechanic.		ed in failure of the	e unit and oil stan	vation failure c	of the engin	oil pump, which resulted in failure of the unit and oil starvation failure of the engine. A factor was the lack of supervision of the owner/pilot's	pervision of the owner/pilot's
March 24, 1998	N73780	Passenger	Monument Valley, UT	Scenic Airlines	Cessna T207A	Substantial	Serious 0		Loss of engine power (total) Descent - emergency (pilot - nonmechanical initiated; i.e., after decompression)	Descent - emergency (pilot initiated; i.e., affer decompression)
Probable Cause: standard operatir unsuitable terrain	Probable Cause: The engine's total power loss due to the standard operating procedures in their airplane's informunsuitable terrain on which to perform a forced landing.	al power loss d their airplane's form a forced la	Probable Cause: The engine's total power loss due to the induction air ductions standard operating procedures in their airplane's information manual, and the unsuitable terrain on which to perform a forced landing.	fucting separating because of the FAA to	e of Inadequate m require non-stan	naintenance by co idard operating pr	ocedures in th	inel. Facto le manufac	Probable Cause: The engine's total power loss due to the induction air ducting separating because of inadequate maintenance by company personnel. Factors were the failure of the maintacturer to provide non-standard operating procedures in their airplane information manual; and the soft, sandy, unsuitable terrain on which to perform a forced landing.	ufacturer to provide non- anual; and the soft, sandy,
March 26, 1998 Probable Cause: leg.	N3700G The pilot's failure	Cargo e to extend the	arch 26, 1998 N3700G Cargo Sioux Falls, SD A. Probable Cause: The pilot's failure to extend the landing gear for landing. leg.		Cessna 310R the accident wer	Substantial re: the crosswind,	None 0 and the pilot	not followin	Wheels up landing g his normal habit pattern of I	met Systems Cessna 310R Substantial None () Wheels up landing Landing - flare/touchdown actors associated with the accident were: the crosswind, and the pilot not following his normal habit pattern of lowering the landing gear on base
April 3, 1998 Probable Cause	N1205F The plints select	Passenger financial designation of unsuitable	April 3, 1998 N1205F Passenger Coldroot, AK N Prohable Causer The pilot's selection of unsuitable terrain for takeoff Soft	North Quest Aviation Cessna 185F Substanti	Cessna 185F was a factor in the	Substantial Substantial	None 0	No page of the Arrive and the pro-	On ground/water encounter with terrain/water	On ground/water encounter Taxi (includes runaway while with terrain/water incompanies hand-propping)
April 3, 1998	N400AR	Passenger	West Palm Beach, FL Dove One		Cessna 402B	Substantial	None 0		Main gear collapsed	Landing - flare/touchdown
Probable Cause:	The pilot allowed	d the airplane to	Probable Cause: The pilot allowed the airplane to improperly touchdown on		gear, resulting in	the gear collapsi	ng, and subse	quent impa	act with runway visual range e	the right main landing gear, resulting in the gear collapsing, and subsequent impact with runway visual range equipment.
April 7, 1998	N868FE	Cargo	Bismarck, ND	Corporate Air doing business as Federal Express	Cessna 208B	Destroyed	Fatal 1		Loss of control - in flight	Approach - final approach fix/outer marker to threshold (instrument flight rules)
Probable Cause: experience in this	Probable Cause: The pilot's failure to maintain experience in this make and model of airplane.	e to maintain a	dequate airspeed durin	g the approach which resu	ilted in an inadver	rient stall. Factor	s associated v	with the acc	ident were the icing condition	Probable Cause: The pilot's failure to maintain adequate airspeed during the approach which resulted in an inadvertent stall. Factors associated with the accident were the icing conditions and the pilot's low level experience in this make and model of airplane.
April 8, 1998	N2083C	Cargo	Del Rio, TX	pril 8, 1998 N2083C Cargo Del Rio, TX Phillips Air Service Beech E18S Substantial Minor Minor Dechanic Cargo Del Rio, TX Phillips Air Service Beech E18S Substantial Minor Minor Dechanic Cargo Dechanic	Beech E18S	Substantial Substantial		nicological services and an extension of the services and the services are services and the services and the services and the services are services and the services and the services are services are services and the services are services are services and the services are services	O Loss of engine power	Takeoff - initial climb (to first power reduction or pattern altitude; includes crosswind leg)
April 10, 1998	N7527S	Mail	Mapleton, ME	Maine Flight Center	Aerostar 600A	Destroyed	Fatal 1	of coloring at the coloring at	Loss of control - in flight	Takeoff - initial climb (to first power reduction or pattern altitude; includes crosswind leg)
Probable Cause:	The failure of the	e pilot to maint	Probable Cause: The failure of the pilot to maintain control of the airplane of	ne during takeoff for undetermined reasons	ermined reasons.					
April 17, 1998 Probable Cause.	N59604	Passenger	Cameron, LA	April 17, 1998 N59604 Passenger Cameron, LA Houston Helicopters Bell 206B Substantial Substantial Causes The loss of engine power for undetermined reasons and the pilot's improper fare which resulted in a hard landing	Bell 206B	Substantial Substantial	None	O CONTRACTOR OF THE PROPERTY O	Loss of engine power	Approach - visual flight rules pattern - final approach
April 20, 1998	N87WC	Cargo	Los Angeles, CA	Helinet	Bell 206L-1	Substantial	None 0		Loss of engine power - mechanical failure/malfunction	Approach
Probable Cause	An overtemp of	the engine dun	Probable Cause: An overtemp of the engine during start within 10 hours of	s of the accident, and the failure to report the event to the maintenance facility	allure to report th	e event to the ma	intenance fac	llty.		

									T		T	
Phase of Flight	Cruise (includes low altitude straight and level flight)	net Express Beech 58 Destroyed Fatal 1 Vortex turbulence Approach encountered follow wake turbulence avoidance procedures by not staying above the glide-path of the preceding Boeing 757, which resulted in a vortex 9, and night conditions.	sm Taxi - from landing	Airframe/component/system Takeoff - roll/run (ground or failure/malfunction water)	Landing - roll	Landing - flare/touchdown on and geographic area,	Loss of engine power (total) Cruise (includes low altitude - mechanical straight and level flight) failure/malfunction	Landing - roll	Loss of engine power (total) Cruise (includes low attitude - nonmechanical straight and level flight)	Cruise - normal	Passenger North Platte, NE Spec. Spec. Spec. Probable Cause: The slipped number two bearing in the airplane's right engine, which blocked the bearing's oil feed line, causing the bearing and the crankshaft to overheat and fracture. A factor contributing to this accident was the trees.	tic Transportation Cessna 207 Substantial None 0 Loss of engine power Climb - to cruise vice vice ne engine as a result of inadequate inspection by company maintenance personnel. Factors associated with this accident were the company n, and the inadequate design of the throttle arm by the manufacturer.
First Occurrence	In flight encounter with weather eout conditions.	Vortex turbulence encountered ath of the preceding Boeing	Airframe/component/system Taxi - from landing failure/maifunction	Airframe/component/systefailure/malfunction	Overrun onditions.	3y 17, 1998 N65759 Passenger Monument Valley, UT Scenic Airlines Cessna 172P Substantial Minor 0 In flight encounter with Landing - flare/touchd weather Probable Cause: The pilot's failure to maintain directional control of the aircraft during landing. Factors were gusty, crosswind conditions, the pilot's factore in type of operation and geographic area, mountainous terrain, and high density altitude.	Loss of engine power (tots - mechanical failure/malfunction	Overrun	Loss of engine power (tota - nonmechanical	In flight encounter with weather wire.	Loss of engine power (tota - mechanical failure/malfunction ihaft to overheat and fracture	Loss of engine power nel. Factors associated with
Total Fatalities	0 gs, and white	1 e the glide-pa	0	0 Geasons.	0 nd whiteout c	0 ilot's lack of e	0	0	0	5 tension static	0 od the cranks	0 ance person if.
Highest	Minor ere low ceilin	Fatal taying abov	None	None	Minor te tailwind ar	Minor ditions, the p	Minor	None	Minor	Fatal og and high	Minor Minor	None any mainten manufacture
Damage to Aircraft	Substantial n the accident we	Destroyed	Substantial	Substantial or controls for un	4185F Substantial Minor 0 Overrun Related factors were the tailwind and whiteout conditions.	Substantial , crosswind conc	Destroyed	Substantial	Substantial stem.	Destroyed is the incoming for	Destroyed	Substantial spection by compotitle arm by the
Aircraft Type	Cessna 207A ditions. Factors i	Beech 58 ice avoidance pros.	Cessna 320D	Dassault DA-20	Cessna A185F airplane. Relate	Cessna 172P actors were gush	McDonnell Douglas 520N	Learjet 24-B	Piper PA-18 ater in the fuel sy	Bell 206L-3 iributing factor we	Cessna 414	Cessna 207 of inadequate ins design of the th
Operator of Aircraft	rril 22, 1998 N7438U Passenger Scammon Bay, AK Hageland Aviation Cessna 207A Substantial Minor 0 In flight enco Services Probable Cause: The pilot's continued visual flight rules flight into instrument meteorological conditions. Factors in the accident were low ceilings, and whiteout conditions.	ril 23, 1998 N258B Cargo Columbus, OH Aimet Express Probable Gause: The pilot's inadequate planned approach and his failure to follow wake turbulence turbulence encounter. Contributing to the accident was the wake turbulence, and night conditions.	Star West Industries doing business as Star West Aviation he left landing gear.	3y 12, 1998 N617GA Passenger Monroe, MI Grand Aire Express Dassault DA-20 Substantial None 0 and Cargo and Cargo Probable Cause: The pilot-in-command's inability to rotate during takeoff due to restricted movement of the elevator controls for undetermined reasons.	ay 16, 1998 N1473F Passenger Talkeetna, AK Doug Geeting Aviation Cessna. Probable Cause: The pilot selected the wrong runway and intentionally ground looped to stop the airplane.	Soenic Airlines aircraft during landing. Fi	Windward Aviation	Panther Aviation braking procedures.	3y 23, 1998 N8578D Passenger Glennallen, AK Tundra Piper PA-18 Sul Probable Cause: The pilot's inadequate preflight of the airplane's fuel system, and presence of water in the fuel system.	ay 25, 1998 N96CW Passenger Indian Trail, NC US Helicopters Bell 206L-3 Destroyed Fatal 5 In fil weal Probable Cause: The pilot's failure to maintain altitude while operating in adverse weather. A contributing factor was the incoming fog and high tension static wire.	Silverhawk Security Spec. engine, which blocked the	y 29, 1998 N9956M Cargo Bethel, AK Arctic Transportation Cessna 207 Substantial None 0 Service Probable Cause: The throttle arm disconnecting from the throttle linkage to the engine as a result of inadequate inspection by company maintenar maintenance personnel not following the repetitive Service Bulletin inspection, and the inadequate design of the throttle arm by the manufacturer.
	Scammon Bay, AK ght rules flight into instru	ril 23, 1998 N258B Cargo Columbus, OH Air Probable Cause: The pilot's inadequate planned approach and his failure to turbulence encounter. Contributing to the accident was the wake turbulence	yy 1, 1998 N3316Q Passenger Greybull, WY Star West Industr doing business as West Aviation Probable Cause: Stress overtoad failure of the bellcrank assembly of the left landing gear.	Monroe, MI ity to rotate during takeo	Talkeetna, AK unway and intentionally	Monument Valley, UT Scenic Airlines directional control of the aircraft during lar	ay 20, 1998 N112HD Passenger Lanai City, Maui, HI Windward Aviation Probable Cause: An oil starvation failure of the number 5 bearing for undetermined reasons.	3y 23, 1998 N100DL Passenger Orlando, FL Panther Aviation Probable Cause: The first officer's failure to perform proper emergency braking procedures.	Glennallen, AK tof the airplane's fuel sy	Indian Trail, NC altitude while operating in	North Platte, NE	ay 29, 1998 N9956M Cargo Bethel, AK Arc Ser Probable Cause: The throttle arm disconnecting from the throttle linkage to the maintenance personnel not following the repetitive Service Bulletin inspection
Type of Operation	Passenger inued visual fli	Cargo equate planne ng to the acci	Passenger failure of the	Passenger and Cargo mand's inabil	Passenger ed the wrong	Passenger to maintain sity altitude.	Passenger failure of the	Passenger failure to per	Passenger quate preffigh	Passenger to maintain	Passenger	Cargo disconnecting ing the repetit
Registration Number	N7438U e: The pilot's conti	N258B e: The pilot's inade ounter. Contributir	N3316Q e: Stress overload	N617GA e: The pilot-in-com	N1473F e: The pilot selecte	ny 17, 1998 N65759 Passenger Probable Cause: The pilot's failure to maintain mountainous terrain, and high density altitude.	N112HD	N100DL 3: The first officer's	N8578D s: The pilot's inade	N96CW :: The pilot's failure	N888AA N: The slipped num e trees.	N9956M : The throttle arm rsonnel not followi
Date	April 22, 1998 Probable Cause	April 23, 1998 Probable Cause	May 1, 1998 Probable Cause	May 12, 1998 Probable Cause	May 16, 1998 Probable Cause	May 17, 1998 Probable Cause mountainous ter	May 20, 1998 Probable Cause	May 23, 1998 Probable Cause	May 23, 1998 Probable Cause	May 25, 1998 Probable Cause	May 28, 1998 N881 Probable Cause: The s	May 29, 1998 Probable Cause:

Date	Registration Number	Type of Operation	Location	Operator of Aircraft.	Aircraft Type	Damage to Aircraft	Highest Injury	Total Fatalities	First Occurrence	Phase of Flight
May 30, 1998	N187EH	Passenger	Juneau, AK	Era Helicopters	Aerospatiale AS- 350-B2	Substantial	Fatal	7	Midair collision Cruise	Cruise (includes low altitude straight and level flight)
Probable Cause: procedures to mo	The failure of bo	oth command pi	llots to maintain an adec he appropriate radio free	quate lookout to see and a quency, and his lack of fa	avoid each other's miliarity with the ge	aircraft. Factors a	associated	with the acc	Probable Cause: The failure of both command pilots to maintain an adequate lookout to see and avoid each other's aircraft. Factors associated with the accident were the other pilot's failure to follow published advisory procedures to monitor/issue position reports on the appropriate radio frequency, and his lack of familiarity with the geographic area.	ollow published advisory
June 7, 1998	N16814	Passenger	Corpus Christi, TX	Houston Helicopters	Bell 206B	Substantial	None	0	Airframe/component/system Approach - visual flight rules failure/malfunction pattern - final approach	Approach - visual flight rules battern - final approach
Probable Cause: during landing.	The failure of the	e tail rotor drive	Probable Cause: The failure of the tail rotor drive shaft due to the separation during landing.	ation of a bolt at one of the	drive shaft disc co	ouplings for an u	ndetermine	ed reason, w	of a bolt at one of the drive shaft disc couplings for an undetermined reason, which resulted in the pilot's inability to maintain directional control	naintain directional control
June 9, 1998	N9855X	Passenger	Chickaloon, AK	ne 9, 1998 N9855X Passenger Chickaloon, AK Hudson Air Service Cessna 185 Substantial	Cessna 185	Substantial	None	None 0	Loss of engine power (total) Approach - visual flight rules - nonmechanical pattern - final approach enhanced loss of angles power	Approach - visual flight rules pattern - final approach
June 16, 1998	N185DG	Passenger	Talkeetna, AK	Douglas Geeting Aviation	Cessna A185F	Substantial	None	0		Takeoff (modify with operational code 24563, if on touch-&-go)
Probable Cause:	The failure of the	e right main lan	iding gear leg due to fati	igue cracking. A factor a	ssociated with this	accident is the in	adequate	inspection p	Probable Cause: The failure of the right main landing gear leg due to fatigue cracking. A factor associated with this accident is the inadequate inspection procedure specified by the manufacturer	
June 16, 1998	N446JR	Cargo	Helena, MT	Corporate Air	Aero Commander 680FL	Destroyed	Fatal	To the second second	In flight collision with Approterrain/water fix /ou rules)	Approach - iaf to final approach fix /outer marker (instrument flight rules)
Probable Cause: The pilot's fail course reversal was performed.	The pilot's failur vas performed.	e to maintain th	ne correct altitude while	turning inbound during a	procedure turn to the	he ILS final appr	oach cours	e. Factors ir	Probable Cause: The pilot's failure to maintain the correct altitude while turning inbound during a procedure turn to the ILS final approach course. Factors include hilly/mountainous terrain and clouds in the area where the course reversal was performed.	ouds in the area where the
June 17, 1998	N2162C	Passenger	Bethel, AK	Kusko Aviation	Cessna 207	Substantial	None	0	In flight collision with object Appropre	Approach - visual flight rules pattern - downwind
Probable Cause: An in-flight collision with a large bird.	An in-flight collis	sion with a large	e bird.							
June 19, 1998 Probable Carse.	N1673U The improper in	Passenger stallation/under	Holy Cross, AK	inland Aviation Services Cessna 207	Cessna 207	Substantial Substantial	None	0 fracture of	ne 19, 1998 N1673U Passenger Holy Cross, AK Inland Aviation Services Cessna 207 Substantial None 0 Loss of engine power(total) Cruise (includes low altitude straight and level flight) I failure/malfunction Fraight and level flight) Fraight and level flight)	Cruise (includes low attitude straight and level flight)
terrain for a forced landing.	d landing.	istalianoli/uliude	reingus en ure englister	dailecase boils by compo	iny maintenance pr	מיסטוויפו, מיוט מי	napadna			מככותפווג אמס מווסמונמטום
June 25, 1998	N594BK	Passenger	Mt. Waialeale, HI	Ohana Helicopter Tours Eurocopter AS- 350-BA	Eurocopter AS- 350-BA	Destroyed	Fatal	9	In flight encounter with Cruise weather straigh	Cruise (includes low altitude straight and level flight)
Probable Cause: meteorological α the area	The pilot's decis onditions and a c	sion to continue collision with a r	VFR flight into deterior. nountain side. A factor	ating weather conditions in the accident was the fa	consisting of loweri allure of the chief p	ng ceilings and v ilot, who had dire	risibility in r ectly obser	mountainous ved the dete	Probable Cause: The pilot's decision to continue VFR flight into deteriorating weather conditions consisting of lowering ceilings and visibility in mountainous terrain, which resulted in the inadvertent entry into instrument meteorological conditions and a collision with a mountain side. A factor in the accident was the failure of the chief pilot, who had directly observed the deteriorating weather conditions, to direct the following pilots to avoid the area.	ent entry into instrument the following pilots to avoid
July 16, 1998 Probable Cause:	N1763U The disconnection	Mail on of the mixtur	ly 16, 1998 N1763U Mail King Salmon, AK Yu. Probable Cause: The disconnection of the mixture control cable from the m	Yute Air e mixture control arm. Fac	Cessna 207	Substantial Substantial	Minor Were the in	0 adequate 10	Loss of engine power Cruise (includes low all (partial) - mechanical straight and level flight) (partial) - mechanical straight and level flight) failure/malfunction kture control arm. Factors associated with this accident were the inadequate 100 hour inspections performed by company mechanics.	Cruise (includes low altitude straight and level flight) y company mechanics.
July 25, 1998	N8622U	Passenger	Skwentna, AK	Talaheim Lodge & Air Service	Enstrom F-28F	Substantial	None	0	Loss of engine power Hover (partial) - mechanical (axi) failure/maifunction	Hover (stationary; excludes aerial taxi)
Probable Cause: associated with t	A loss of engine the accident was	the downwind	a fractured number thre (tailwind) landing condit	e cylinder intake manifok ion.	flange, and the pil	of's inability to m	aintain the	proper rate	Probable Cause: A loss of engine power due to a fractured number three cylinder intake manifold flange, and the pilot's inability to maintain the proper rate of descent during the autorotation flare. A contributing factor associated with the accident was the downwind (failwind) landing condition.	e. A contributing factor

Number	Number Operation	רסכמוסוו			Aircraft	Injury	Fatalities		
September 10, 1998 N7380U	Passenger	Hughes, AK	Warbelow's Air Ventures Cessna 207A	Cessna 207A	Substantial	None 0		Hard landing	Landing - flare/touchdown
use: The pilot's inad	equate compen	Probable Cause: The pilot's inadequate compensation for the wind conditions,	ditions, and an inadvertent stall. A factor in the accident was the presence of a tail wind	stall. A factor in th	he accident was t	he presence	of a tail wing	d.	and the second second of the s
September 11, 1998 N1563C Probable Cause: The pilot's failu	Cargo re to follow the a	St. Mary's, AK aircraft checklist, and ar	ptember 11, 1998 N1563C Cargo St. Mary's, AK Alaska Central Express Beech 1900C Substantial None 0 Wheels up landing Probable Cause: The pilot's failure to follow the aircraft checklist, and an inadvertent wheels up landing. A factor was the pilot's distraction due to a malfunction of the flap system.	Beech 1900C Iding. A factor wa	Substantial	None () a malfunctio	Wheels up landing on of the flap system.	Landing - flare/fouchdown
September 13, 1998 N1754U Probable Cause: The pilot's sele	Passenger ction of unsuitat	Sleetmute, AK ble terrain for departure	ptember 13, 1998 N1754U Passenger Sleetmute, AK Inland Aviation Services Cessna 207 St Probable Cause: The pilot's selection of unsuitable terrain for departure. A factor in the accident was a narrow runway.	Cessna 207 as a narrow runwa	Substantial	None	0	On ground/water collision with object	Takeoff - roll/run (ground or water)
September 17, 1998 N1809Q Probable Cause: The pilot's cont	Cargo linued visual fligh	Kotzebue, AK ht rules flight into instru	Village Aviation ment meteorological condi	Cessna 207 lions. Factors ass	Destroyed sociated with the	Fatal accident we	re low celling	ptember 17, 1998 N1809Q Cargo Kotzebue, AK Village Aviation Cessna 207 Destroyed Fatal 1 In flight encounter with Not reported weather weather should be accident were low cellings, mountainous/hilly terrain features, rain, and fog	Not reported features, rain, and fog.
September 25, 1998 N300EW Probable Cause: A 6-8 inch crac to fold on landing. A factor in the	Mail k on the right ma e accident was th	Orlando, FL ain landing gear strut, w he pilots execution of a	ptember 25, 1998 N300EW Mail Orlando, FL Flight Express Cessna 210L Sub- Probable Cause: A 6-8 inch crack on the right main landing gear strut, which allowed the hydraulic fluid to escape from the fold on landing. A factor in the accident was the pilots execution of a night landing without her prescribed eye glasses.	Cessna 210L fluid to escape fro rescribed eye glat	Substantial om the system, al isses.	None 0	ower pack s	Gear collapsed equencing valve failure whic	ptember 25, 1998 N300EW Mail Orlando, FL Flight Express Cessna 210L Substantial None 0 Gear collapsed Landing Probable Cause: A 6-8 inch crack on the right main landing gear strut, which allowed the hydraulic fluid to escape from the system, along with a power pack sequencing valve failure which allowed the main landing gear to fold on landing. A factor in the accident was the pilots execution of a night landing without her prescribed eye glasses.
September 25, 1998 N900JH Probable Cause: The inadverten	Passenger and Cargo it deactivation of	Schofield, WI f the fuel selector and the	ptember 25, 1998 N900JH Passenger Schofield, WI Wisconsin Aviation Piper PA-34- Substantial Minor 0 Loss of eng and Cargo Tropies Schofield, WI Probable Cause: The inadvertent deactivation of the fuel selector and the emergency procedure not followed by the pilot-in-command. The tree was a contributing factor.	Piper PA-34- 220T not followed by the	Substantial pilot-in-command	Minor (0 was a contribu	Loss of engine power uting factor.	Climb
September 26, 1998 N5697Y Probable Cause: The pilot's failu	Cargo ire to maintain di	Sleetmute, AK irrectional control. Cont	September 26, 1998 N5697Y Cargo Sleetmute, AK Alaska Trophy Piper PA-18 Substar Connection Connection Probable Cause: The pilot's failure to maintain directional control. Contributing factors were the gusty crosswind conditions.	Piper PA-18 sty crosswind cor	Substantial nditions.	Minor	0 0	Loss of control - on ground/water	Takeoff - roll/run (ground or water)
October 8, 1998 N6874M Probable Cause: The pilot's inad	Passenger lequate preflight	tober 8, 1998 N6874M Passenger Napaskiak, AK Hageland Aviatic Services Services Probable Cause: The pilot's inadequate preflight inspection to remove all contaminated furfollowing an annine surre and aborded takeoff and unsuitable terrain for a forced landing.	Hageland Aviation Services all contaminated fuel from the	Cessna 207A ne fuel system. Fa	Substantial actors in the acci	Minor dent were th	0 he pilot's inad	Loss of engine power (partial) - nonmechanical equate planning/decision to	Substantial Minor 0 Loss of engine power Takeoff - aborted Substantial Minor 0 Loss of engine power Takeoff - aborted Services Services Services Services Services Services Services Services The pilot's inadequate preflight inspection to remove all contaminated fuel from the fuel system. Factors in the accident were the pilot's inadequate planning/decision to continue a second takeoff and unsuitable terrain for a forced landing.
October 16, 1998 N6522T Passenger English Bay, AK Probable Cause: The pilot-in-command's inadequate compensation crosswinds, and the congested takeoff area due to no parking ramp.	Passenger mmand's inadeq akeoff area due	English Bay, AK uate compensation for to no parking ramp.	C and L doing business as Homer Air Service the crosswind conditions, a	Britten-Norman BN-2A and failure to main	Substantial Itain adequate cle	None arance from	0 in the parked	On ground/water encounter with weather airplane. Factors associated	tober 16, 1998 N6522T Passenger English Bay, AK C and L doing business Britten-Norman Substantial None 0 On ground/water encounter Takeoff - roll/run (ground or with weather water) with weather water Probable Cause: The pilot-in-command's inadequate compensation for the crosswind conditions, and failure to maintain adequate clearance from the parked airplane. Factors associated with this accident were the gusty crosswinds, and the congested takeoff area due to no parking ramp.
October 17, 1998 N299GL Probable Cause: The pilot-In-con operator's initial aircrew training	Cargo mmand's delaye program. Factor	itober 17, 1998 N299GL Cargo Missoula, MT CLB busing the particle of the properties of the properties of the processes. The processes of the p	tober 17, 1998 N299GL Cargo Missoula, MT CLB Corporation, doing Beech 99 Substantial Minor business as Alpine Aviation Probable Cause: The pilot-in-command's delayed remedial action in response to the co-pilot's improper landing flare, and the co-pilot's approperator's initial aircrew training program. Factors include the co-pilot's improper flare and his lack of total experience in this type of aircraft.	Beech 99 oroper landing flare of total experienc	Substantial Substantial e, and the co-pilor se in this type of a	Minor (0 on of excessiv	In flight collision with terrain/water re (full nose-up) trim during	Corporation, doing Beech 99 Substantial Minor 0 in flight collision with Go-around (visual flight rules) terrain/water before touchdown tion to the co-pilot's improper landing flare, and the co-pilot's application of excessive (full nose-up) trim during the landing flare as taught in the per flare and his lack of total experience in this type of aircraft.
October 18, 1998 N19MH Probable Cause: A downdraff, w	Passenger Passenger Mich exceeded t	Eagle Pass, TX The aircraft's climb perior	October 18, 1998 N19MH Passenger Eagle Pass, TX Critical Air Medicine Cessna 421C Destroyed Minor doing business as Critical Air Medicine Cessna 421C Destroyed Minor Critical Air Medicine Cause. A downdraff, which exceeded the aircraft's climb performance. A factor was the thunderstorms in the vicinity of the airport	Cessna 421C	Destroyed the vicinity of the		id just i i i skalik danse me i i izbajak	weather weather	In flight encounter with Takeoff - initial climb (to first power reduction or pattern power reduction or pattern altitude; includes crosswind leg)
October 19, 1998 N31CE	Cargo	Jackson, MS	stober 19, 1998 N31CE Cargo Jackson, MS Paragon Air Express Beech	Beech BE-58	Substantial	460.10	0	Wheels up landing	Landing - flare/touchdown

	leg)				fix to ker				T,,		Γ			ot-in-		the						
Phase of Flight	Takeoff - initial climb (to 1st power reduction or pattern altitude; includes crosswind leg)		Landing	re.	Approach - initial approach fix to final approach fix/outer marker (instrument flight rules)		Cruise (includes low altitude straight and level flight)	ick of suitable terrain for a	Approach - visual flight rules	surance program in the			limb - to cruise	sion lines, and both the pilc	Cruise (includes low altitude straight and level flight)	fuel exhaustion. Factors in	Landing - flare/touchdown				Takeoff - roll/run (ground or water)	
First Occurrence	Loss of engine power (total) Takeoff - initial climb (to 1st power reduction or pattern altitude; includes crosswind		Main gear collapsed L	The fatigue cracks originated at an internal structural flaw placed in the part during manufacture.		in and the falling snow.	Loss of engine power C (partial) - mechanical s failure/malfunction	Probable Cause: A loss of engine power due to the failure of the number five connecting rod assembly as a result of fatigue cracks that were initiated in areas of galling. A factor was the lack of suitable terrain for a forced landing.	Loss of control - in flight A	Probable Cause: The loss of tail rotor effectiveness, due to the installation of incorrect pitch links by the maintenance facility. A factor in the accident was the lack of an adequate quality assurance program in the maintenance facility.			In flight collision with object Climb - to cruise	with the unmarked transmission lines. Contributing factors were environmental (dusk) conditions, the transmission lines, and both the pilot-in- dous condition (high wires).	Loss of engine power (total) Cruise (includes low altitude - nonmechanical straight and level flight)	Probable Cause: The pilot's continued operation of the airplane with known deficiencies, a failure of company maintenance personnel to replace an inoperative fuel gauge, and subsequent fuel exhaustion. Factors in the accident were siphoning of fuel from the right wing fuel cap, and slush covered terrain.	Hard landing La				Loss of control - on Ta ground/water w	
Total Fatalities	0 .		0	ural flaw place	-	ntainous terrai	٦	itiated in area	0	cident was the	0		0	nvironmental	0	e an inoperativ	0		0		0	
Highest Injury	Minor	.i.g.	None	ernal struct	Fatal	re the mou	Fatal	that were in	Minor	or in the ac	None		None	tors were e	None	el to replace	None	apse.	None		None ind.	
Damage to Aircraft	Substantial	or a lorced larid	Substantial	iginated at an int) Destroyed	ırely. Factors we	Destroyed	of fatigue cracks	Substantial	ce facility. A fact	Substantial		Substantial	. Contributing fac	Substantial	tenance personn	Substantial	causing it to coll	Substantial		Substantial ant was a crosswi	
Aircraft Type	Cessna 207A	insurable terrain	Cessna 208B	fatigue cracks or	Piper PA-31-350 Destroyed	inimums prematu	Piper PA-32R- 300	mbly as a result o	Bell 206L-3	y the maintenan	Cessna 208B		McDonnell Douglas MD-900	ransmission lines wires).	Stinson 10A	of company main	Beech C-45G	iose landing gear	Learjet 55B		Casa C-212 ed with the accide	
Operator of Aircraft	tober 26, 1998 N73533 Passenger Aniak, AK Arctic Circle Air Cessna 207A Substantial Probable Cause: A loss of engine nower due to fuel contamination. A factor in the accident was incuitable terrain for a forced landing	A lactor in the accident was to		Probable Cause: Structural failure of the main landing gear strut due to metallurgical fatigue. The	Sundance Air	Probable Cause: The pilot not following instrument procedures and subsequently descended to minimums prematurely. Factors were the mountainous terrain and the falling snow.	Air Carriers	ber five connecting rod asse	Sundance Helicopters	ation of incorrect pitch links b	Castle Aviation		Idaho Helicopters	Probable Cause: The pilot-in-command's not obtaining/maintaining clearance with the unmarked transmis command and the ground personnel not identifying the existence of the hazardous condition (high wires)	Lake Clark Air	nown deficiencies, a failure covered terrain.	gin National Jets	Probable Cause: The inadequate flare by the pilot-in-command resulting in a hard landing on the nose landing gear causing it to collapse.	Clay Lacy Aviation	on.	F.S. Air Service Casa C-212 Substantial No onditions. A factor associated with the accident was a crosswind.	
Location	Aniak, AK	rider contranillation.	Lanaina, Hi	anding gear strut due	Hayden, CO	nent procedures and su	Roswell, GA	the failure of the num	Pioche, NV	ness, due to the installa	Hamilton, Canada		Idaho City, ID	Probable Cause: The pilot-in-command's not obtaining/maintaining clearance command and the ground personnel not identifying the existence of the hazar	Nondalton, AK	Probable Cause: The pilot's continued operation of the airplane with known de accident were siphoning of fuel from the right wing fuel cap, and slush covered	Charlotte Amali, Virgin Natio Islands	lot-in-command resulti	Los Angeles, CA	Probable Cause: None: Investigation not complete at time of publication.	scember 18, 1998 N502FS Passenger Mcgrath, AK F.S. Air Probable Cause: The flightcrew's inadequate compensation for wind conditions.	
Type of Operation	Passenger Passenger	bower and	Cargo	e of the main	Cargo	lowing instrun	Cargo	power due to	Passenger	otor effective	Cargo	investigation.	Passenger	ımand's not ol nel not identifi	Passenger	nued operatio	Cargo	flare by the pi	Passenger	tion not comp	Passenger inadequate co	
Registration Number	N73533	T 100014	NSOUPE	Structural failur	N35533	The pilot not foll	N8554C	A loss of engine	N946L	The loss of tail r ty.	N27MG	Vone. Foreign	N977LF	The pilot-in-com ground person	N36755	The pilot's continuous	N555NJ	he inadequate	N554CL	vone. Investiga	N502FS he flightcrew's i	
Date	October 26, 1998	October 26 4000	October 20, 1998	Probable Cause:	October 28, 1998	Probable Cause:	October 28, 1998	Probable Cause: # forced landing.	November 3, 1998	Probable Cause: The maintenance facility.	November 26, 1998 N27MG	Probable Cause: None. Foreign investigation.	November 29, 1998 N977LF	Probable Cause: 1 command and the	December 4, 1998 N36755	Probable Cause: 1 accident were siph	December 10, 1998 N555NJ	Probable Cause: T	December 17, 1998 N554CL	Probable Cause: N	December 18, 1998 N502FS Probable Cause: The flight	